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# PSYCHOEDUCATIONAL ASSESSMENT WITH THE DEAF AND HARD-OF-HEARING

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# PSYCHOEDUCATIONAL ASSESSMENT WITH THE DEAF AND HARD-OF-HEARING

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Abstract

This study addressed the preferred choices of tests by psychoeducational professionals for individuals who are deaf and hard-of-hearing (D/HOH) in five areas of assessment (cognitive/intelligence, neuropsychological, academic skills, speech and language, and socio-emotional/psycho-behavioral). The study also addressed test modifications, use of language, and psychometric issues such as reliability, validity, and normative data. Currently, many tests lack appropriate psychometric properties for the D/HOH. Given this information, an exploratory approach was taken to identify common tests. This is an important area of research because it affects a minority group – the deaf and hard-of-hearing, for whom psychoeducational assessment traditionally has proven to be challenging. Evaluation of assessments used with the D/HOH population can facilitate a discussion towards more appropriate test

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## Introduction

This thesis assessed the psychoeducational assessments used for the deaf and hard-of-hearing (D/HOH). Psychoeducational testing can be defined as standardized tests that are administered to students and that are designed to measure psychological and educational abilities (Wodrich, Spencer, & Daley, 2006). In order to better understand how different tests are used for evaluation with this population, the historic and present problems associated with teaching and evaluation are introduced. First, terminology is explained to better understand the differences within the D/HOH population. The history of deaf education is then explained beginning with Thomas Gallaudet's travels to Europe with the hopes of finding the best instructional method to teach deaf in America. The history describes the development and use of American Sign Language (ASL) and the shifts that occurred to oralism and total communication. Next, legislative changes within the school system that have occurred throughout the years are explained.

Demographics of the D/HOH population are then described followed by an introduction on psychoeducational assessments in the field, specifically academic, cognitive, and socio-emotional assessments. The psychometric principles of particular tests are described in detail. The review concludes with pre-assessment considerations, such as the use of interpreters and test variety. Finally, the goals of the present study are explained.

## Terminology

First, it is important to address the terminology that is used throughout this thesis and that currently is used for the deaf and hard-of-hearing populations. These terms include: *hearing impaired*, *Deaf culture*, *deaf*, *Deaf*, *Hard-of-hearing*, and *prelingual deafness* (Landsberger, Sajid, Schmelkin, Diaz, & Weiler, 2013). *Hearing impaired*,

according to Landsberger et al. (2013), is most likely to be used with people who have acquired deafness in adulthood. *Prelingual deafness* is a term used to describe an individual with an onset of deafness prior to age three (Landsberger, et al., 2013). The two terms that are most likely to cause confusion, yet are important, are "deaf," with either an uppercase "D" (i.e., Deaf ) or a lowercase "d" (i.e., deaf). *Deaf* (with a "D") refers to cultural membership in a social community that is mainly composed of individuals who are deaf. The "D" identifies membership to the shared culture, community, and language. In contrast, *deaf* (with a "d") refers to the physical condition of hearing loss. To expand, an individual who has hearing loss but does not identify with Deaf culture would then be categorized as deaf. Most people who identify with Deaf culture typically avoid using the term, "impaired," and may find it offensive because this label can imply that the condition is pathological (Ladd, 2003). Whether one identifies as hard-of-hearing (HOH) or Deaf is a matter of self-identification to the social community one identifies with, and/or where one feels the most sense of belonging.

Those who are deaf and hard-of-hearing (D/HOH) may chose to wear a hearing aid or undergo surgery for a cochlear implant (CI). A hearing aid is a small electronic device that makes some sounds louder (National Institute on Deafness and Other Communication Disorders (NIDCD), 2014). It is worn in or behind the ear and has three basic parts: a microphone, amplifier, and speaker. A cochlear implant is a small electronic device that can help to provide a sense of sound to those who are profoundly deaf or severely HOH (NIDCD, 2011). The implant consists of an external portion that sits behind the ear and a portion that is surgically placed around the ear under the skull. The difference between hearing aids and CIs is that hearing aids amplify sounds so

damaged ears may detect them whereas cochlear implants bypass damaged portions of the ear and stimulate the auditory nerve (NIDCD, 2011). The 2006-2007 Annual Survey of Deaf and Hard of Hearing Children and Youth found that approximately 12.6% of students in the sample had a CI. In addition, three major CI companies reported that 50,000 children worldwide have received a CI up to 2008 (Leigh, Maxwell-McCaw, Bat-Chava, & Christiansen, 2009).

Another important idea is that of person-first language. This is a concept that explains how to refer appropriately and respectfully to an individual with a disability. Person-first language emphasizes the person versus the disability (CDC, 2014). For example, when referring to a person with a disability, one refers to the person first by using phrases such as: "a person with..." or "person who has..." An exception to this rule is that the community of persons who are Deaf prefer to use deaf with a capital D to denote the Deaf culture and the Deaf community, not the hearing loss (Folkins, 1992). Thus, this does not reflect any disability but instead a cultural group, which is why at many times person-first language is not used in this thesis.

Deaf individuals comprise a unique minority group and must be understood as such. It is important to note the differences between these terms and to understand the differences and choices those with deafness make when identifying themselves. It is also important to understand the differences when designing tests for a particular individual. The present research included professionals' who had administered assessments to D/HOH students at any time over the past two years. This research is important to help evaluate the current practices by many professionals working with the D/HOH population. Many tests, in all areas, are created and use normative data devised for the

hearing population. The results of this study provide an overview of methods and practices that currently are being used within this field. Assessors, at times, may neglect the history and unique culture of the D/HOH resulting in inappropriate use of many tests.

## History of Deaf Education

In 1815, Thomas Gallaudet travelled to Europe with the hope of obtaining the information he needed to start a school for the deaf in the United States. After graduating from Yale University, Gallaudet moved home to discover that the daughter of his new neighbors was deaf (Lou, 1988). He found himself having difficulty communicating with her and became curious as to the best methods in how to educate the deaf. He travelled to England to observe the oral instructional methods, developed by the Braidwood family, that were being used to teach the deaf at the time and found himself to be unimpressed. He later viewed an exhibition on sign language by the Institut National des Jeune Sourds-Muet (National Institution for Deaf-Mutes), the first school for the deaf established in Paris (Lou, 1988). While at the exhibition, Gallaudet saw how beneficial sign was for learning and asked Laurent Clerc, a teacher at the school, to return with him to become the first teacher at the first school for the deaf in the United States. The school was established in Hartford, Connecticut in 1817 and named the Connecticut Asylum for the Education and Instruction of Deaf and Dumb Persons (Lou, 1988).

The curriculum that was used in the early schools for the deaf was based on the curriculum that had been developed in Paris, except with a few modifications (Moores, 1992). The first modification was the development of a mode of communication. This mode of communication, and its variations, is the primary language of the deaf today, American Sign Language (ASL). ASL evolved as a combination of French Sign

Language, American Sign Language, and Martha's Vineyard Sign Language. ASL is not a universal language; each country has its own signed language (Steward & Akamatsu, 1988). After the Connecticut Asylum for the Education and Instruction of Deaf and Dumb Persons, now known as the American School for the Deaf, was established, the only mode of instruction was ASL (Lou, 1988). ASL was so important to the Deaf community that the population of the American School for the Deaf felt that, in 1835, every teacher of the deaf must be fluent in the language (Moores, 1992).

With the promise of ASL came the existence of an abundance of schools for the deaf. From 1817 to 1867, twenty-four residential schools for the deaf were built, with an average of one school opening per year from 1844 to 1860. Until 1867, when the Pittsburgh Day School and the Boston Day School were established, the only schools for the deaf were residential (Moores, 1992). It seemed that deaf education was on the rise in America and with this rise came attention towards the Deaf community.

As the 1850s began and this attention grew, so did curiosity in oral methods of instruction. A majority of people believed that if deaf children were in a hearing environment their speech and language skills would develop and they would then become well-adjusted members of the hearing society (Moores, 1992). The first two oral schools, the Lexington School in New York and the Clarke School for the Deaf in Massachusetts, were opened in 1867. The initial purpose for establishing these schools was to serve children who identified as hard-of-hearing who were prelingually deaf (Lou, 1988). Perhaps the success of those individuals promoted the influx of oralism in the United States.

**Oralism in the United States**

Oralism became the dominant and preferred method for instruction in the United States during the 1880s (Lou, 1988). Oralism can be defined as instruction through oral or written language without the assistance of any sign language (Longmore, 1987). By 1870, the schools for the deaf had over 40% of their teaching staff identifying as deaf. As oralism swept the country this percentage declined rapidly and by 1917 deaf teachers made up less than 15% of teaching staff (Tucker, 2011). The height of oralism was partially due to the strong emphasis placed on this instructional method at the 1880 Second International Congress on the Education of the Deaf. The International Convention of 1880 was held in Milan, Italy, and almost 90% of delegates in attendance were from Italy and France (Moores & Moore, 2011). The convention passed several resolutions, two of which are noted here:

1. Given the incontestable superiority of speech over signs in restoring deaf mutes to society and in giving them a more perfect knowledge of language, the oral method ought to be preferred.
2. Considering that the simultaneous use of speech and signs has the disadvantage of injuring speech, lip-reading, and precision of ideas, the pure oral method ought to be preferred (Moores & Moore, 2011, pp. 5-6).

The five members of the US delegation voted against these resolutions stating that the conference was not representative of educators of the deaf from around the world and thus the procedures of passing resolutions were undemocratic (Moores & Moore, 2011). The delegates' statements, however, did not have any effect on how the majority of educators in the United States felt about oralism.

The height of oralism and the shift away from ASL also partially can be attributed to Alexander Graham Bell (Lou, 1988). A supporter of oralism, Bell felt that the use of sign language would prevent the development of oral skills and therefore limit intelligence (Lou, 1988). Bell also believed that having residential schools brought together the deaf who would then intermarry and have deaf children (Tucker, 2011). Bell's primary goal with oralism, apart from enhancing oral skills, was to eliminate the deaf population as a whole (Klerk, 1998). What Bell was unaware of when making these claims, is that 90% of all deaf children, in fact, are born to hearing parents (Klerk, 1998).

By the turn of the 20th Century oralism was the instructional method used in most of the day schools, class programs, and private residential schools (Lou, 1988). To put this shift into perspective, in 1904 approximately 18% of deaf students outside of state residential schools were taught using oralism and in 1917 that percentage rose to above 30% (Lou, 1988). By 1919, nearly 80% of deaf students in the United States were being taught without any use of sign language (Pray & Jordan, 2010). The shift to oralism was so prominent that, in 1927, Gallaudet University, the first University for the deaf in Maryland, discouraged their students from considering a teaching career because employment prospects were so rare (Lou, 1988).

Day, Fusfeld, and Pintner (1928) published what was the largest and most comprehensive in situ study of programs for deaf history. They analyzed teacher background, governance structure, student characteristics, physical facilities, and student achievement scores of 29 public residential schools and 13 public day schools for the 1924-1925 academic year in a national survey. It was discovered that the mode of instruction used in day schools was 97% oral; in the residential schools, 62% of students

were taught using oral methods. The students who were not taught orally at these schools had previously been determined to be unintelligent after being unsuccessful academically with oralism throughout at least elementary school. As was stated by Day et al. (1928), "the oral method is not considered good for dull pupils (p. 270)."

**Total Communication Emerges**

Beginning in the 1960s in the United States, total communication became a primary method of instruction. Total communication can be defined as ASL simultaneously used with speech. Evidence had been provided demonstrating the failure of oral methods for deaf students. In 1965, Boatner (as reported in Evans, 1982) found that more than 30% of the deaf-student population was illiterate and that 60% of deaf students who did not obtain their high-school degree were functioning at a fifth-grade academic level or below. It also was discovered that most of the 5% of students who were able to reach a tenth-grade level or better were hard of hearing or became deaf later in life. There also was evidence emerging showing that deaf children with deaf parents, who used ASL as their primary language, were achieving higher academically than deaf children with hearing parents (Lou, 1988). This was an important finding because it suggested that the early use of ASL was not associated with a delay or inhibition of speech or intellectual development as previously thought. The finding also proved the importance of using ASL in education.

**Legislative Changes**

Beginning in the 1960s in the United States, there were many governmental changes that would help deaf Americans succeed academically. The first was the move away from oralism. Following this, was the establishment of the Rehabilitation Act of

1973 and the Education for All Handicapped Children Act of 1975 (Public Law 94-142), which has since evolved to become the Individuals with Disabilities Education Act (IDEA) (Tucker, 2011). These laws allowed for more equality between the deaf and the hearing populations, including the opportunity for the deaf to attend graduate school at Gallaudet University. Additionally, in 1990, the Americans with Disabilities Act (ADA) was enacted that worked towards ending the discrimination against deaf individuals and the notion that the deaf were less qualified and intelligent (cf. Section 504 of Rehabilitation Act of 1973). With these improvements in place, almost 90% of all deaf children were being educated in public-school programs or public residential schools (Moores, 1992).

Since the development of PL 94-142, the right to a free, appropriate public education in the least restrictive environment has changed the way in which education is conceptualized. One such change has been that deaf students are now educated in an integrated setting with hearing students. Statistics from fall 2004 showed that nearly 90% of deaf and hard-of-hearing students who were receiving special education services under IDEA were spending a portion of their day in classrooms with hearing students (Mitchell & Karchmer, 2010).

## Demographics

Demographics of deaf students in special education have been monitored through annual reports to congress. These reports show that deaf and hard-of-hearing students resemble the general population as closely as any other group of students with disabilities (Mitchell & Karchmer, 2010). Of the deaf students, 54% are boys and 46% are girls (Office of Education and Rehabilitative Services, 2011). From fall 1997 to fall 2006, the

percentage of hearing impairments within the total number of students classified under IDEA by ethnicity ranged from 0.9% in Black (not Hispanic) to 2.7% in the Asian/Pacific Islander classification (Office of Education and Rehabilitation Services, 2011). There is no information about why the Asian/Pacific Islanders have at least a 1.2% greater population of students who have a hearing impairment, especially because their risk index was the same as other ethnicities for developing a hearing impairment. (Asian/Pacific Islanders also have noticeably higher percentages in Autism and Speech and Language impairments and a slightly higher percentage in multiple disabilities in orthopedic impairments, Office of Education and Rehabilitative Services, 2011). As of the Fall 2011, the percentage of students classified with hearing impairments under IDEA that were spending 80% of the day or more in regular classrooms was 56.7% (Office of Education and Rehabilitative Services, 2014).

One problem with the data from the report to congress is that the government has no legal standard for defining deafness. The federal government simply applies the broad, heterogeneous label of hearing impairment when counting students who receive special services under IDEA (Mitchell & Karchmer, 2010). Outside of the federal government, others have classified the range of deafness one can experience, from mild to moderate to severe (Mitchell & Karchmer, 2010). Hearing loss can be measured in decibels (dB) and mild hearing loss to profound hearing loss can range from 26 to 120 dB lost. According to Blackorby and Knokey (2006), of those students who are identified for special education, 17% experience a mild hearing loss, 39% experience a moderate hearing loss, and 44% experience a severe to profound hearing loss. Of those students who use ASL, 6% identify as having a mild hearing loss, 22% identify as having a

moderate hearing loss, and 72% identify as having a severe-to-profound hearing loss. These data show that a large majority of individuals using ASL have significant hearing loss. An important implication is that those students with moderate to profound hearing loss have a smaller chance of obtaining the verbal language, making the use of ASL even more of a necessity.

## Psychoeducational Assessment Results

A major problem with the current United States education system is the large differences that occur between groups academically. Compared to their hearing peers, deaf students are performing at a much lower level. In 1988, Lou found that the average reading level for deaf high-school seniors was third grade, and that almost half of deaf students were scoring between the second- and third-grade levels on tests of academic achievement. Qi and Mitchell (2011) also found differences between groups. They looked at the scores that deaf students obtained on the Stanford Achievement Test (SAT) Series over a number of decades. They found that the reading comprehension performance level never exceeded a fourth-grade level, for mathematic problem solving, the median performance never exceeded a sixth-grade level, and finally for mathematic procedures the performance never exceeded an eighth-grade level.

### Academic Assessment

This first large-scale nationwide academic achievement testing program began in 1969 for the deaf and hard-of-hearing. It has served as a benchmark for assessing student academic achievement in deaf education. One problem with this mode of testing is that the validity and reliability of the SAT for the deaf and hard-of-hearing population still

require extensive analysis. Developing valid and reliable tests for this subgroup of students, however, has been an ongoing process.

To improve validity for each subject area, the Stanford Achievement Test for Hearing Impaired (SAT-HI) was developed in 1974 (Qi & Mitchell, 2011). The SAT-HI was based on the current SAT for hearing students but improved measures were achieved by adopting a screening test to ensure each student was tested at the appropriate grade level for each subject and to provide practice materials for students to become familiar with the format of the assessment (Qi & Mitchell, 2011).

Because so many deaf students' reading and English language-proficiency levels are much lower than most of their same-aged hearing peers, these students tend to be assessed with what is known as "out of level" testing approaches (Mitchell & Karchmer, 2010). This kind of testing may result in a number of deaf and hard-of-hearing students being classified as much older than the age range for which the test is typically administered. This, of course, means that further caution must be used when interpreting academic-achievement test scores. For example, the difficulty levels of items are not directly comparable when the level of testing differs by several grade levels. Mitchell (2008) analyzed data from the SAT ($10^{th}$ ed.) and the Woodcock Johnson ($3^{rd}$ ed., WJ-III). It is important to note that the SAT is a test where students can be tested out of level and the WJ-III is a test based on age-based norms independent of grade level. It was found that deaf and hard-of-hearing students made comparable academic gains annually; however, the highest performing deaf and hard-of-hearing students fell within the middle scores of the hearing students and the lowest performing deaf and hard-of-hearing students fell further behind their hearing peers with each year (Mitchell, 2008). The

question remains, was this due to the development of the test, the language, and interpretation taken by the deaf and hard-of-hearing students, was it due to the methods of instruction prior to the test, was it due to statistical artifacts associated with instruments with less than optimal psychometric properties, or perhaps a combination of these factors? As previously noted, students who are deaf with deaf parents achieve higher academic levels then those with hearing parents. So is it purely the lack of instruction from the schools themselves? These questions must be further investigated.

**Language Fluency and Academic Achievement.** As of 2010, there had only been one large-scale study that attempted to link fluency in ASL to academic achievement (Mitchell & Karchmer, 2010). This study, conducted by Moores and Sweet (1990) analyzed the relationship between fluency and reading and writing skills. Participants included adolescent deaf students from the Model Secondary School for the Deaf (MSSD), the Maryland School for the Deaf, Gallaudet University, and the Virginia School for the Deaf. A pilot study was administered to identify a battery of tests appropriate for use with adolescent students. Upon analyzing these data, a final test battery was established (see appendix A). The battery was administered to three groups of students. The groups were deaf students with deaf parents who used ASL, deaf or hard-of-hearing students with hearing parents who used the total communication method, and deaf or hard-of-hearing students with hearing parents who used oral communication methods (Moores & Sweet, 1990).

The battery that was designed for this research may seem extensive and encompassing, but upon closer investigation, it is evident that the only large-scale study on this subject lacks reliability in its methods. The first concern with this study, is that

there were no pre-existing procedures that were satisfactory measures of a comprehensive knowledge of ASL narrative or syntax (Moores & Sweet, 1990). Developing an adequate measure was discussed, although it was determined that the time it would take to develop exceeded the amount of available time to complete the study. In addition, other tests, such as the Peabody Picture Vocabulary Test (PPVT), Peabody Individual Achievement Test (PIAT): Reading Comprehension Subtest, and Expressive One-Word Picture Vocabulary Test (EOWPVT) lack norms for the D/HOH population. It seems that without psychometric support for these tests, they should have been avoided being included in the methods or studied. Another problem with the battery is that because this research was conducted in the late 1980s, most of the tests that were used have been updated for content, internal consistency, test constructs, and interpretation of results. One such example would be the Wechsler Adult Intelligence Scale-Revised (WAIS-R) that was used to determine both a verbal comprehension index as well as a performance index. The Wechsler Adult Intelligence Scale that was administered for this study has since been replaced with both the WAIS-III (3rd ed.) and the WAIS-IV (4th ed.).

The results of Moores and Sweet's (1990) study should be interpreted carefully and should be used only as a reference for additional research. In all three groups, measures of English vocabulary and syntax contributed to reading comprehension. Hearing measures did not predict reading ability of the students who used total communication with hearing parents; however, it was found that one's ability to lip read did. This finding especially should be taken with extreme caution as even those who claim to be experienced lip readers know that there are many words that result in the same formation of the mouth, and without a signed or spoken language to accompany it,

miscommunication is likely to occur. It was also suggested that deaf children with deaf parents who had knowledge of English grammar and vocabulary, along with an ability to use minimal amounts of auditory input, was highly predictive of reading skills for deaf adolescents who had been exposed to sign language from birth. The quality of a child's fluency in speech, English sign, or ASL was not a major factor.

Since this study was published, there have been a number of smaller scale studies evaluating differences between reading ability and fluency in deaf or hard-of-hearing students. Mayberry and Chamberlain (1994) found that reading skills were associated with the student's measures of English-based signing (signing exact English) and ASL. In addition, they found that reading was not correlated with the spoken language. Then in 1997, Hoffmeister, DeVilliers, Engen, and Topol, concluded that both English-based signing and ASL skills were related to reading comprehension. An important consideration in all these studies, including Moores and Sweet (1990), is that fluency levels may be a predictor in achievement levels. Unfortunately, research is still needed to support these findings.

**Cognitive Assessment**

Performance of D/HOH students also has been compared to hearing students on metacognition (Al-Hilawani, 2008). Metacognition was measured in two ways: (a) visual-voiced measure – composed of visual analyses of real-life color pictures using voiced or signed explanations to describe the pictures and (b) visual-visual measure – composed of visual analyses and discriminations by pointing to the picture that was different out of a choice of five. The visual-voiced measure had an internal consistency reliability coefficient of 0.89 after unclear pictures were removed (with a split-half

reliability coefficient of 0.60 based on the test in its original form). Al-Hilawani (2008) found no significant differences between the hearing and D/HOH groups, suggesting that exposure to sign language might be the aiding factor. Early introduction to sign language and high fluency levels may be associated with better-developed visual-spatial skills (Parasnis, Samar, Betterger, & Sathe, 1996). Thus, language fluency is an important consideration to take into account when evaluating D/HOH individuals.

**Social-Emotional Assessment**

Meadow-Orlans, Spencer, and Koester (2004) reported that deaf children who share the same language as their parents showed comparable social and emotional development as their hearing peers. This is important because more than 90% of deaf children are born to hearing parents who do not share or possibly will not share the same language (Meadow-Orlans et al., 2004). If it has been shown that deaf children in deaf or all-sign families develop at a similar rate to their hearing peers, then why does research continue to show disparate results in communication with parents and students?

**Conclusions**

The most important conclusion that can be interpreted from these findings is that deaf students perform more poorly than their hearing peers; however, they are not the only population of people who are falling behind. An example of this includes schools in urban districts. A number of these schools do not receive necessary funding and face overpopulated class sizes, which results in teachers being unable to give struggling students attention. This, too, leads to lower performance scores. Lou (1988) emphasized, "surely the cost of raising the levels of achievement and language to hearing standards is lower than the cost to society of vocationally wasted individuals who must receive social-

security benefits throughout their adult lives" (pp. 96-97). Her statement, 20 years later, could be expanded from deaf students to any student achieving below expectations. The question that must be addressed is, are these achievement gaps due to the individual or due to the lack of appropriate educational services, interventions, tests, and curricula currently available in the schools or an interaction of multiple factors?

## Psychometrics and Psychoeducational Assessments for the Deaf

Since federal legislative programs such as No Child Left Behind (NCLB) and Individuals with Disabilities Education Act (IDEA) were enacted, all students must be included in state and district-wide assessment programs. The *Standards for Educational and Psychological Testing* (AERA, 2014) mandates that an assessment/test (a) has evidence of validity for its purpose of use, (b) accurately reflects the construct it is claiming to measure, and (c) should not measure disabilities that are unrelated to the intended test constructs (Maller, 2004). These large-scale assessments must be administered to students with disabilities to measure academic-achievement levels in comparison to state standards. Technical standards, however, have not yet been established for the inclusion of special-education populations in these assessment programs.

When it comes to assessing or developing standardized tests for the deaf or hard-of-hearing, it is important to remember that ASL has no written form. The written form that deaf individuals use is English; however, written/spoken English does not have the same sentence and grammatical structure as ASL. For example, if one were to ask somebody if one wanted to drive, the English structure would be, "Do you want to drive?" but in ASL this would translate as "drive, you want?" It is important to be aware

that this difference in structure may be associated with potential challenges for deaf and hard-of-hearing individuals fully expressing their knowledge. According to Qi and Mitchell (2011), the solution would be to take these standardized tests and translate them into ASL. There has been, however, a lack of psychometric studies on reliability and validity that these new tests would produce and little support financially. Another problem that may result from this suggestion is that ASL includes gestural movements and expressive facial expressions. Finger-spelling, forming ASL letters with the hands to make a word, can be challenging for some students, especially those who are below their peers in reading and writing English. It is much more typical for other signs to be used or scenarios involving that specific sign expressed in a way to teach others the meaning of an unknown sign. For example, if a person did not understand the sign "president" another person may sign "Lives in the White House and is named Obama." For a test to be appropriate the translations would have to be identical and, because many sentences can be signed in many ways, this may have the potential to cause complications and confusion among interpreters. The South Carolina Department of Education has attempted to solve this problem by videotaping state achievement tests in both ASL and Signed English (Qi & Mitchell, 2011). In practice, this seems like a good idea; however, upon further investigation, it was discovered that reliability and validity data for all subtests were unavailable.

**Wechsler Intelligence Scale for Children**

Another example includes the Wechsler Intelligence Scale for Children (5th ed.; WISC-V; Wechsler, 2014). The WISC-V does not include normative data on the D/HOH for standardized scoring. In the manual there is one sentence regarding administration

with the D/HOH. In regards to the Nonverbal Index (NVI), a score comprised of subtests that do not require expressive responses, the manual states, "the score also provides a useful estimate of overall ability for children who are deaf or hard of hearing, or children who are English language learners (Wechsler, 2014, p. 34)." There is no other mention of how to administer the WISC-V or what precautions to take when evaluating the D/HOH. The second time D/HOH were mentioned was in the Technical and Interpretive Manual where it was stated that uncorrected hearing loss is characterized as an exclusionary hearing loss.

The Perceptual Reasoning subtests from the Wechsler Intelligence Scale for Children (4th ed.; WISC-IV; Wechsler, 2003) have been argued as being appropriate for measuring the cognitive functioning of children who are D/HOH (Krouse & Braden, 2011; see also Wechsler, 2003, pp. 12-18). Despite these arguments, however, D/HOH children were excluded from the standardization sample and not one of the 11 special-group studies that were conducted addressed this population (Wechsler, 2003b). During the standardization of the Wechsler Intelligence Scale for Children, (4th ed.; WISC-IV; Wechsler, 2003), 16 special-group validity studies were conducted; however, D/HOH children were excluded from the sample. Due to this exclusion, there are no data to describe the psychometric properties of these scores with D/HOH children (Krouse & Braden, 2011). In addition, there is a critical need for tests with sufficient psychometric evidence for use with the D/HOH (Maller & French, 2004). Deaf students are too often assessed using translated tests that lack evidence of validity for specific subtests, meaning they may measure the intended test constructs differently (Maller & French, 2004). Regrettably, results from a national survey prior to 1990 indicated that 73% of school

psychologists who served D/HOH children chose to administer a verbal intelligence scale to a D/HOH child. Furthermore, 66% of that 73% included these results in their reports (Maller, 1991).

Krouse and Braden (2011) reported that practitioners volunteered to give completed protocols for psychometric evaluative use. Results suggested that the WISC-IV scores were at least as reliable in regards to internal consistency for D/HOH and normative population. With the exception of Block Design and Picture Concepts, WISC-IV subtest- and index-score internal-consistency reliability coefficients were higher for the D/HOH sample. When evaluating validity, results indicated that the PRI index and VCI index were significantly lower than the normative data (Krouse & Braden, 2011). The authors, therefore, recommended that if using extra caution when interpreting the results the WISC-IV. The main concern for the changes from the WISC-III to the WISC-IV were the modifications made to the Perceptual Reasoning Index (PRI). D/HOH tend to score higher on performance tests than on motor-reduced nonverbal tests (Braden, 1994, 2005; Braden, Kostrubala & Reed, 1994) resulting in changes to the PRI as possibly shifting from a performance scale. An example of this would be the reduction of speed influence for the subtest Block Design, potentially reducing its factor loading on the performance scale (Krouse & Braden, 2011). This is a serious consideration for the evaluation of the D/HOH population, due to the fact that a subtest may have become more challenging due to the lack of normative data and comparison to prior editions.

Braden and Krouse (2011) recommended extra caution when evaluating the WISC-IV due to their research on the validity of subtests within the Wechsler Intelligence Scale for Children scales. As noted, the mean PRI for D/HOH was lower

than the normative sample. The Verbal Comprehension Index (VCI) had a significantly lower mean as well; however, this was consistent with previous research suggesting indirect support for the belief that VCI scores reflect knowledge and verbal reasoning in D/HOH examinees (Braden & Krouse, 2011). Modifications were not acknowledged, leaving the reader to wonder how it can be assumed that D/HOH examinees have less knowledge and verbal reasoning skills than their hearing peers. The WISC-III VCI has been found to have many items that contain differential item functioning (DIF) or bias between groups of deaf and hearing children of equal ability (Maller, 1996; 1997) and the DIF for the WISC-IV was unknown at this time. If the VCI on the WISC-IV still shows bias between the hearing ability groups this should be addressed. In addition, the structure of the test should be considered and the content of the questions. For the Vocabulary subtest, for a student who is fluent in ASL, a number of English words share the same sign, even when these words are not perfect synonyms. Another concern might include the fact that most D/HOH children are born into hearing families and that some family members may not learn or become fluent in ASL. This could result in a lack of skills measured by the VCI. This is similar to the research conducted by Hart and Risley (1995) who discovered that children whose families were on welfare heard 600 words per hour whereas working class children heard 1,200 words per hour, and finally, children from professional families heard 2,100 words per hour. If we compare this research to any other language differences, a parent who is not fluent in ASL will not be teaching their children important vocabulary for language development. With these thoughts in place, is it appropriate to conclude that the VCI is a true reflection of the ability and knowledge of D/HOH examinees? Administering verbal tests of intelligence for

cognitive assessment of D/HOH individuals is not recommended, and thus, should not be used to measure intelligence as it is confounding language skills with intelligence (Braden, 1994; 2000).

Finally, Braden and Krouse (2011) concluded that the research reviewed suggested that the WISC-IV was a good test to use with D/HOH children in regards to internal consistency based on the scores from the WISC-III and WISC-IV. However, only eight of the 15 subtests and two of the five indexes were evaluated. Perhaps the internal consistency was supported but only for a small portion of the test, leaving a concern about the reliability of a comprehensive WISC-IV. Unfortunately, a literature review by Braden (1992) on cognitive tests found that the Wechsler Intelligence Scale for Children was preferable to other tests by professionals.

A major consideration for designing instruments for the D/HOH population is how they should be administered. What are the options for the administration? It is important to acknowledge individual differences among the deaf, just as within the hearing population. What are the reading abilities or levels of the D/HOH in the study? Are the questions culturally appropriate and are they clear to individuals who are D/HOH? Are assessments easier to conduct with a certified interpreter rather than individually? In contrast, will the participant understand the questions without an interpreter present? All of these questions may be important considerations for when a new tool is even being proposed for the D/HOH population. If they aren't thoroughly evaluated and resolved, as historically they haven't been, the result most likely will be the continuation of unsound psychometric assessments that may result in misleading and inaccurate data.

**Universal Nonverbal Intelligence Test**

The Universal Nonverbal Intelligence Test (UNIT) was claimed by Maller (2000) to be the first test to have some evidence to support it as a fair measure of intelligence for D/HOH children. Many researchers and practitioners see the UNIT as an alternative to language-based cognitive tests for the D/HOH (Lund, Miller, & Ganz, 2014). The aim of Maller's research was to investigate UNIT factor invariance using multi-sample confirmatory factor analysis (MCFA). MCFA is chosen as a statistical analysis tool to test the assumption that a scale is measuring the same trait(s) across different groups. Measurement invariance (MI) will occur when analysis yields the comparison of scores to not show meaningful results. Once construct equivalence has been achieved, it is fair to indicate that test constructs are being measured similarly across the different groups.

Principal-axis exploratory factor analysis (EFA) previously has been used by researchers to investigate whether intelligence test constructs are measured differently for deaf and hearing children (Maller & French, 2004). Maller and French (2004) found only one previously published study involving D/HOH children and MCFA as an analysis tool. This 1997 study evaluated the general form of the WISC-III four factor model and found that error variances, coefficients, factor variances, and covariances differed for the deaf and standardized hearing groups, suggesting the possibility of scores having different meanings across groups (Maller and French, 2004).

The UNIT claims to measure two separate theoretical two-factor models of intelligence (primary and secondary). The primary model measures memory and reasoning whereas the secondary model measures symbolic and non-symbolic factors (Maller & French, 2004). The findings implied that both models fit fairly well for both the standardization sample (children ages 5-17 years) and the deaf sample (ages 5 to 17

years who used sign language as their primary mode of communication, identified no other disabilities, and enrolled in self-contained special-education classrooms). The use of the primary model is preferred for use with deaf children and the UNIT is also a preferred test over other intelligence tests because of the lack of DIF and discovery of partial measurement invariance in the primary model (Maller & French, 2004). Due to the lack of MCFA analyses, it is further recommended that current intelligence tests, such as the Wechsler, be evaluated in order to identify any item biases (DIF) and measurement invariance.

Other practitioners and researchers have also found it to be a viable alternative to verbal intelligence tests (Maller, 2003). One study discovered that the UNIT provided consistent, roughly normative score profiles from a sample of D/HOH individuals (Krivistski et al., 2004). Lund et al. (2014) acknowledge that the UNIT does hold an advantage over other tests in that it has eliminated all oral and language-based components from the testing environment, however it is not a perfect alternative. One important consideration is that by only assessing D/HOH nonverbally we then suggest that these individuals have no verbal skills and language-based cognition (Lund et al., 2014). By using this test, it seems that in a way, professionals are accepting that we can attain a rough score of what we may expect the D/HOH student's true score to be in nonverbal intelligence. It may suggest that since we no perfect solution, we have accepted an 'as close as possible' score for evaluating this population.

**Deaf Acculturation Scale**

The Deaf Acculturation Scale (DAS) is one of the first measures that is culturally sensitive towards the Deaf culture and meets relatively high psychometric standards,

making it an important tool for the D/HOH. The majority of Deaf people's acculturation tends to occur beginning from school age or later. Some deaf individuals do not even become acculturated, which may be due to the fact that over 90% of deaf children are born into hearing families. Thus, these individuals are not becoming acculturated in the traditional means of cultural transmission, parent-to-child, as many other individuals become acculturated (Maxwell-McCaw & Zea, 2011).

There is a large variation in the acculturation experiences of D/HOH people in the United States. Acculturation can be defined as "a process of psychological and behavioral change that occurs as individuals engage in ongoing contact with a new culture (Maxwell-McCaw & Zea, 2011, p. 326)." There has been more than one belief on how one can become completely assimilated into the Deaf culture. Some believe assimilation includes involuntary biological criteria that are defined by: hearing loss or Deaf parents and/or patrimony (which has been described as attributes other than biology) (Johnson & Erting, 1989). Another belief by Bahan (1994) indicates that complete membership is achieved through Deaf experience and Deaf world knowledge. One of the most important aspects to assimilation is the identification with Deaf people. For most individuals, full acceptance is not obtained unless some degree of hearing loss exists. The hearing children of Deaf parents (CODAs) typically tend to be culturally Deaf; they tend not to be considered full members of the Deaf community (Maxwell-McCaw & Zea, 2011).

The Deaf Acculturation Scale (DAS) was created for future determination of how individuals felt they identified with the Deaf culture. The two scales that construct the DAS are (a) Acculturation to Deaf Culture (DASd) and (b) Acculturation to Hearing

Culture (DASh) (Maxwell-McCaw & Zea, 2011). Each scale comprises five subscales that measured acculturation across cultural involvement, cultural knowledge, language competence, cultural preferences, and cultural identification. After conducting factor analyses, the reliability was determined to be fairly strong. Cronbach's alpha coefficients for the DASd subscales ranged from .84 to .92 and .95 for the overall scale. The DASh coefficients ranged from .71 to .85 with an overall scale alpha of .91 (Maxwell-McCaw & Zea, 2011).

Concurrent validity was assessed by comparing scores of participants with deaf parents to those with hearing parents. Additionally, examining the relationship between the types of high schools the participants attended assessed concurrent validity. Those with deaf parents and/or those who attended deaf schools showed higher levels of Deaf acculturation on the DASd whereas those with hearing parents and/or those who attended a hearing school showed higher levels of hearing acculturation on the DASh. Secondly, concurrent validity was also assessed by having participants label if they identify as Deaf or hearing. Individuals who scored as Deaf acculturated overwhelmingly identified themselves as Deaf (Maxwell-McCaw & Zea, 2011).

One limitation of the current DAS model is that there is no signed version. The authors did acknowledge this limitation and hope that as it expands a signed version may become available for those who need it, especially younger children or those who are less educated. The model has been determined to be ready for use due to the psychometric principles that were obtained.

## Pre-Assessment Considerations

Students who are D/HOH make up a unique heterogeneous minority group so appropriate treatment must reflect these traits. As this thesis so far has expressed, the deaf population has long been cheated of a fair academic experience. Assessments should be administered that meet appropriate psychometric properties. As this is not yet a possibility, however, it is important to consider other aspects of a participant's background, such as language, culture, and school system. Thus, any test used with D/HOH children should embrace a comprehensive evaluation of a variety of factors that relate to the pre-determined assessment goal. A multi-factorial transactional model should be utilized (Wood, 2010) to include looking at a child's environment, context, and the child themselves. It is important to focus on more than just one test (Landsberger et al., 2013; Wood, 2010) when working with a child who is D/HOH because of the discrepancies between tests, specifically with cultural and linguistic differences in mind. Some considerations that should be addressed prior to assessment include: the use of an interpreter and language, the types and variety of tests to be chosen, test adaptations, difficulty, and setting, and psychometric principles.

**Use of an Interpreter**

In the United States, data from the 2009-2010 Annual Survey of Deaf and Hard-of-Hearing Children and Youth indicated that nationwide in the home, 71.6% of family members do not regularly sign (Gallaudet Research Institute, 2011). ASL is the language used most regularly in the home in only 5.8% of individual's surveyed (Gallaudet Research Institute, 2011). Importantly, data were also collected on the language most spoken in the child's school. Nationwide, English was overwhelmingly the language used in the schools at 80.9% and Spanish was reported at 17.2%, leaving ASL as the

primary language used in the schools for 14.5% of those surveyed. Multiple answers were allowed for this survey and it is important to take into consideration that some of these percentages may be inflated. Overall, what the most recent available data are suggesting is that there is an overwhelming preference for spoken language with the deaf or hard-of-hearing student. The problem with the 2009-2010 Annual Survey of Deaf and Hard-of-Hearing Children and Youth is that the preferred language of the child was not included in the results. Unfortunately, some children may be using English primarily in the schools, but this is no indication of how they wish they were communicating. If the children themselves primarily use English over ASL then these results may not be as concerning for the future of the deaf students. If the student primarily uses ASL as the mode of communication, however, then the nation may want to rethink and reevaluate its belief and procedures for both the mode of communication in the home and in the school settings. Deaf children with hearing parents, on average, exhibit sign-language skills that are less developed than their peers with deaf parents (Knoors & Marschark, 2012).

According to Landsberger et al. (2013), any test is more valid when completed in a client's primary language. Thus, if one were to follow this belief, an ideal assessment would include the tests of choice normed in the child's language. Prior to the assessment, it is important to identify the client's preferred mode and fluency of communication. When determining these factors, the assessor should determine particular factors including the amount of exposure to language, keeping in mind that children who are deaf who have hearing parents, on average, exhibit sign-language skills that are less developed than their peers with deaf parents (Knoors & Marschark, 2012). It is also important to determine the age at which exposure began, if the family is deaf or hearing,

the type of schooling the child received (e.g., residential, public, or private), as well as the involvement in the Deaf community (Landsberger et al., 2013).

As almost no tests have been normed in ASL, the next choice would be that the assessor is fluent in ASL; however, if that is not possible, the use of an interpreter is an option. There are many considerations to factor when choosing an interpreter. There is always the risk that the interpreter may pose confidentiality issues, so it is imperative that appropriate guidelines are followed to reduce miscommunication and error (Wood, 2010). Ideally, a CDI (certified deaf interpreter) would be used during assessments as their training includes gathering an attempted message in many forms of signed and gestural language (Landsberger et al., 2013). Alarmingly, most states do not require specialized training in mental-heath interpreting to become an interpreter in psychiatric settings, suggesting that prior to research, interviews should be completed to assess the training level of potential interpreters. It was uncovered that the majority of interpreters in public classroom settings do not have sufficient skills for communicating with students (Krause, Kegl, & Schick, 2008). Assessors must understand that ASL cannot be interpreted word for word, both grammatically and for many psychological terms (Landsberger et al., 2013), which may require extra time for assessment completion to assure understanding. Facial expressions, body language, and emphatic gestures are all used as modifiers for emotions and adjectives in ASL. It may be wise for an interpreter to observe tests prior to working with a client to gain valuable information on testing style, aims of each test, terminology, and goals of assessment.

**Variety of Assessments**

It is highly unlikely that a single instrument will adequately capture enough data for a comprehensive evaluation. The best assessment of a child will be determined from a combination of instruments and methods that are appropriate for the child's age, cultural background, and linguistic proficiency (Ray, 1989). This combination of instruments was unspecified upon further review, leading to the possibility of psychometric issues (including incremental validity concerns) developing. Using a variety of tests may permit a more accurate description of an individual (Plapinger & Sikora, 1995; Wood & Dockrell, 2010). Authors have suggested that using a variety of tests helps achieve a more stable and effective description of an individual (Plapinger & Sikora, 1995; Wood & Dockrell, 2010). Many researchers recommend not basing a diagnosis on one criterion, especially when unfamiliar with ASL or Deaf Culture (Landsberger et al., 2013, Ray, 1989; Wood & Dockrell, 2010). When choosing tests, one must select tests that are psychometrically appropriate for the client. The tests must have appropriate floors to not discourage the individual too early and appropriate ceilings to determine the extent of capacities. Failing to adhere to appropriate floors and ceilings creates considerable risk of obtaining inaccurate results.

One of the most important aspects to remember is that any test for D/HOH children should embrace a comprehensive appraisal of a variety of factors that relate to the assessment goal that has been set up for the child (Wood & Dockrell, 2010). It is essential that any test for children who are D/HOH provide comprehensive appraisals of factors that relate to the established assessment goals (Wood & Dockrell, 2010). A multi-factorial transactional model is one such suggested example, which includes static, dynamic, and observational measures with qualitative data. The more information

compiled the more it may help in understanding the children with which one works. Of course, an important caveat is that the amount of information collected by a clinician does not necessarily improve decision-making accuracy and, in fact, may even lead to a decline in accuracy (see Faust & Ahern, 2012, p. 179).

**Assessment Accommodations**

When an assessor adjusts a test, it is called a test or assessment accommodation (Wood & Dockrell, 2010). As accommodations may affect the validity of a test, it is important to note and to record explicitly any accommodations that may occur. When making modifications to test administration, it is important to understand that shifting away from standard procedures may change the meaning of resulting test scores. These changes may result in test norms no longer being appropriate for the student (Lee, Reynolds, & Wilson, 2003). Some accommodations include bilingual administration (the use of ASL or a signed language with verbal language). At times, bilingual administration or signed test adaptions should be used cautiously. Wood and Dockrell (2010) include an example of the use of the Peabody Picture Vocabulary Test (PPVT) with signed administration. The PPVT asks clients to point to a particular word but for particular signs, the sign and picture may correspond almost identically. For example, the sign "to drink" is a visual correspondence to the meaning or exactly/similar to how a hearing person would act out drinking a glass of liquid. There are other signs that would not pose any threat to identifying or linking the picture, as they have no link to the word, for example, "cereal" or "dog." One possibility exists for avoiding signs that would link the picture, which includes the use of finger spelling or Signed English. This may produce inconsistencies in the administration and cause problems for children who have

weakness in spelling (Braden, 2001). Prior to administration, it may be of importance to first consider how the accommodations and modifications chosen could affect test scores.

## The Present Study

A major consideration for designing instruments for the deaf and hard-of-hearing (D/HOH) population is the method or mode of administration. What are the options for the administration? It is important to acknowledge individual differences among the deaf, just as within the hearing population. Are the questions culturally appropriate and are they clear to individuals who are D/HOH? Are assessments easier to administer with a certified interpreter rather than without? Will the participant understand the questions without an interpreter present? Lee et al. (2003) gave support that regardless of the intent of test alterations, test performance could be significantly affected and change the psychometric properties of the tasks.

Due to the laws and protections set forth by the IDEA and Section 504 of the Rehabilitation Act of 1973, children who are D/HOH are protected from discrimination and may be eligible to receive special-education services. Thus, students who are D/HOH are considered to have a physical impairment that significantly limits hearing, Section 504 protects them. To determine if that student is eligible, evaluations and re-evaluations must be conducted every three years as set forth by law. This means that students who are D/HOH are continually being evaluated in ways that may or may not be psychometrically sound, including use of modifications. It is important to explore the ways in which evaluation is being conducted to help better assess and serve these students.

The present study aimed to examine professionals' assessment methods when working with the D/HOH. Based on the exploratory nature of the proposed study, test choices for each area were reviewed through frequency tables. The following hypotheses were proposed: (a) The hearing status of examiners and their proficiency with sign-language will be significantly related to test preferences; specifically, those who are deaf and have fluency in ASL versus those who are not deaf and lack such fluency will use tests that are more sensitive to the D/HOH population; and (b) The test modifications participants choose will vary based on test choice, with similarities occurring across participants with identical tests.

## Summary

Terminology for the D/HOH was first introduced to explain how to better understand the differences within the D/HOH population. Following the terminology, the history of deaf education is discussed from the first school for the deaf, now called The American School for the Deaf, to the use of ASL, to oralism, to total communication. From here, legislative changes within the school system were described as they have changed throughout the years. Demographics of the D/HOH population are given in a breakdown through statistics of those on record with IDEA.

Finally, an introduction on psychoeducational assessments in the field, specifically academic, cognitive, and socio-emotional tests were explained in regards to psychometric principles that are lacking in terms of administration for particular populations. The review concluded with pre-assessments considerations, such as the use of interpreters and test variety and the goals of the present study were explained.

## Method

### Participants

Participants included professionals who conduct cognitive, behavioral/social-emotional, neuropsychological, and academic assessments with individuals who are D/HOH. They were recruited through a Yahoo interest group, IG-SchPsyDeaf, which has been created for such professionals who spend time dedicated to working with this population. The group consists of 392 members and the group description states that this restricted group is for school psychologists working with deaf and hard of hearing students and their families. The group changed during the study, deleting the inclusion of NASP (National Association of School Psychologists) in their title. In addition, it seems that including all professionals working with the D/HOH has been adapted versus restricting the site to school psychologists. The group was founded in 1999 and is categorized under Special Education. As a restricted group, this means that the manager of the site must approve ones request to join; thus, proof of interest must be presented. No other demographic information is available.

Nineteen members completed the questionnaire. The sample consisted of three men, 14 women, and two individuals who did not identify their gender. Participants were all from the United States with one exception of someone reporting living in Ontario. Only two of the participants reported identifying themselves as deaf/Deaf and none reported being hard-of-hearing. All other participants classified themselves as hearing. The modal number of participants (26.3%) was between ages 30-39. Of the participants, 78.9% were Caucasian, 5.3% were African American/Black, and 15.8% chose not to

identify ethnic status. Participants were asked to identify their primary roles at their place of employment and those roles are reported in Table 1.

Table 1

Primary Working Role

| Primary Role | n |
|---|---|
| Assessment/Report Writing | 10 |
| Psycho-Educational/Behavioral Intervention | 2 |
| Teaching | 2 |
| Counseling | 1 |
| Administration | 1 |
| Clinical Psychology | 1 |
| Missing | 2 |
| Total | 19 |

In terms of credentials, nine participants reported having a Master's Degree 30+ or a Specialist Degree, three participants had obtained a Master's Degree, and five had a Doctoral Degree. Sixteen participants reported having had coursework or training that addresses the Deaf/Hard-of-Hearing. One participant had not experienced such training and two participants chose not to respond. Finally, participants were given the opportunity to specify their level of Sign Language, which is reported in Table 2.

Table 2

Sign Language Use

| Type of Sign Language | n |
|---|---|
| Fluent in ASL | 11 |
| Partially Fluent in ASL | 5 |
| Basic ASL | 1 |
| Signed Exact Speech | 1 |
| Cued Speech | 1 |
| Total | 19 |

In order to have been included in this research, participants must first have been approved by the administrator of the Yahoo group prior to gaining access to the information located within the group. Thus, all participants had previously obtained access to the group. Currently, no demographic information is available for all group members. Information was posted via the interest group on a brief introduction on the present research with a survey monkey questionnaire link included (see Appendix B) for interested participants to click and direct them to the questionnaires. All participants who were members of the listserv had an equal opportunity for participation in this study by choosing to complete the online survey they received in an email through the listserv. All participants were treated ethically according to principles established by the American Psychological Association (American Psychological Association, 2010) and University of Rhode Island's Institutional Review Board (Vice Provost for Graduate Studies, Research and Outreach, 2002).

## Materials

**Demographics Questionnaire**. Participants received a questionnaire asking them to report their gender, age, hearing status, region in which they work, academic degree, fluency of ASL, percentage of time working with D/HOH, place of work, and primary role at work (see Appendix C). It was placed in the beginning of the survey to increase response rate without affecting response rate for non-demographic items (Teclaw, Price, & Osatuke, 2011). Teclaw et al. (2011) found that placing the demographics at the beginning of a questionnaire resulted in a higher demographic item completion rate, no decreased response rate for non-demographic items, and no meaningful differences between non-demographic item means when compared to placing the demographics at the end of a questionnaire (Teclaw et al., 2011). The questions related to the knowledge of language, academic career, and current profession.

**Assessment Preference Questionnaire**. Second, participants received a questionnaire that required them to list their top four test preferences for the D/HOH in regards to assessment areas. These areas were (a) cognitive; (b) social-emotional/psycho-behavioral, including direct observation; (c) neuropsychological; (d) speech and language; and (e) academic skills. Participants were first asked if they had administered any tests in one of the five specified areas during the past two years. If the participant responded "no," the section was skipped and continued with the next assessment area. Out of the nineteen participants, no one had administered speech and language testing in the past two years and thus no data were available for analysis. The participants were then asked to list up to four tests they had administered in the past two years that were associated with that area (e.g., if they responded "yes" to cognitive, they were asked to

list up to four cognitive tests they used most often). For each test they mentioned, they were asked to choose the approximate percentage of time they had administered such test over the past two years. Then, they were asked to check all modifications they had made to that test. They were asked to approximate the percentage of times they had employed the use of an interpreter and the percentage of times they had used a form of ASL during assessment. These questions had the possibility of being answered a total of 20 times, if a participant gave four tests for each of the five areas previously mentioned (see Appendix D).

Each assessment area also required participants to rank order their previously identified preferred tests based on their interpretation of psychometric importance, using a scale ranging from 1 (Most Important) to 6 (Least Important). Each number could be used only once. Two choices were included that should not be included with psychometric importance (e.g. Clinical Considerations and Flexibility of the Test).

**Procedure**

Participants who clicked on the survey link gained access to both questionnaires. They were asked to read and sign an informed-consent form (see Appendix E) and then to complete the two questionnaires. After completing both questionnaires, participants were able to view a debriefing form (see Appendix F).

## Results

The results begin with reporting demographic information, including hearing status, ASL fluency, and how participants learned ASL. Next, the results of the Assessment Preference Questionnaire show how often participants administered each of the five assessment categories including which tests were their preferences when working with D/HOH students. Percentage of time participants used the tests are described in regards to the previously mentioned most popular choices.

Next, the results report all identified tests that participants mentioned for each category, including how often participants made modifications to those tests. Finally, the results summarize psychometric importance data through means and standard deviations for each assessment category.

### Demographics Questionnaire

In the demographics questionnaire, participants were given the opportunity to identify if they classified themselves as hearing, hard-of-hearing, or deaf. Of the nineteen participants, fifteen were hearing, two classified themselves as deaf, and two chose not to respond. Due to the small sample and unequal group sizes, previously anticipated comparisons between hearing and deaf participants were excluded from the analyses. As noted in the previous description of participants (Table 2), they also had the opportunity to identify their perceived ability level of sign language. Participants were allowed to check all responses that applied. Sixteen participants responded and two reported more than one answer. Fifty-eight percent of participants classified themselves as being "fluent in ASL" and all participants reported having at least basic knowledge of ASL. Definitions

were not provided with these classifications and, in hindsight, this might have caused some subjective interpretations of abilities.

The demographics questionnaire also asked participants to report where they learned sign language. In this section, participants were only allowed to respond to one option with the mode, 47.1%, replying that they "enrolled in courses or an academy for a number of years to become fluent/near fluent in the language." For the "Other" category, 29.4% of respondents replied with write-in answers of the placements where they were taught the language. These included attending Gallaudet University, working in a school for the deaf, immersion training, and interaction with the Deaf community.

Participants were also asked to report the percentage of time that they worked with D/HOH individuals. Two participants were excluded from this analysis because of a lack of response. The percentages ranged from 0-100%. The modal number of participants, 35.3%, reported working with this population 100% of the time. This was followed by 17.6% of participants spending approximately 21-50% of time working with the D/HOH, another 17.6% reporting 51-75% of time, and 11.8% reporting 76-99% of the time with the same percentage of participants reporting 1-20% of the time. Finally, 5.9% of participants reported spending 0% of their time working with the D/HOH population.

**Assessment Preference Questionnaire**

**Categories and numbers of assessments**. The Assessment Preference Questionnaire addressed (a) cognitive; (b) social-emotional/psycho-behavioral, including direct observation; (c) neuropsychological; (d) speech and language; and (f) academic skills. No participants reported having administered any speech and language tests

within the past two years. When a participant had not administered any tests in a specific area over the past two years, that section was skipped and questions were not asked that pertained to that section. Unfortunately, once the data were reviewed, a number of participants exited the survey prior to completion with reasons unknown. Figures 1-5 show the number of participants who administered particular assessments categories over the last two years.

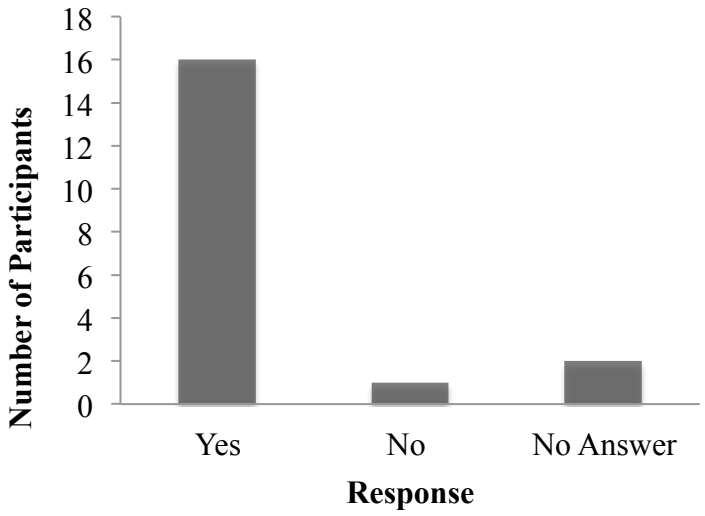


*Figure 1*. "Within the past two years, have you administered any cognitive/intelligence tests for D/HOH students?"

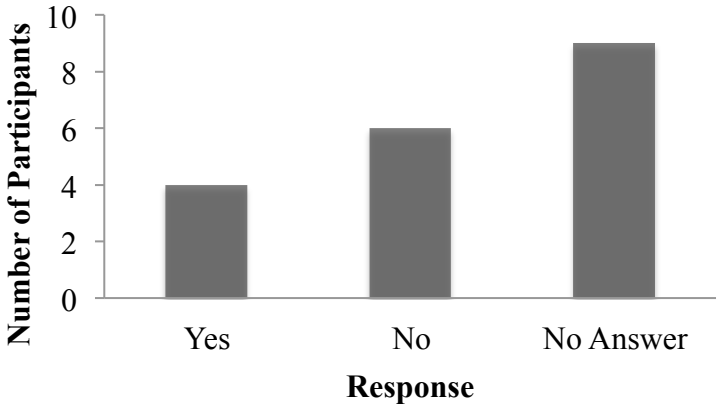


*Figure 2*. "Within the past two years, have you administered any Neuropsychological tests for D/HOH students?"

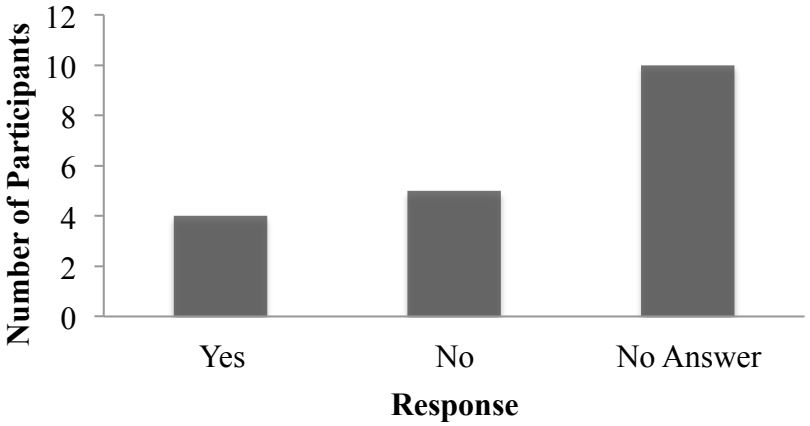


*Figure 3*. "Within the past two years, have you administered any Academic Skills tests for D/HOH students?"

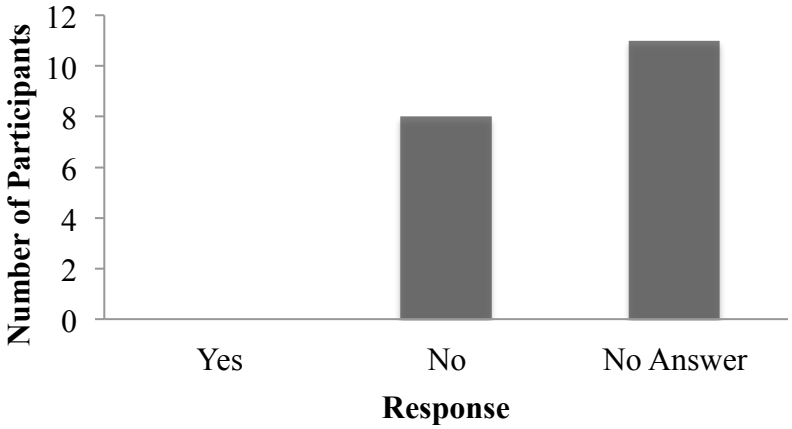


*Figure 4.* "Within the past two years, have you administered any Speech and Language tests for D/HOH students?"

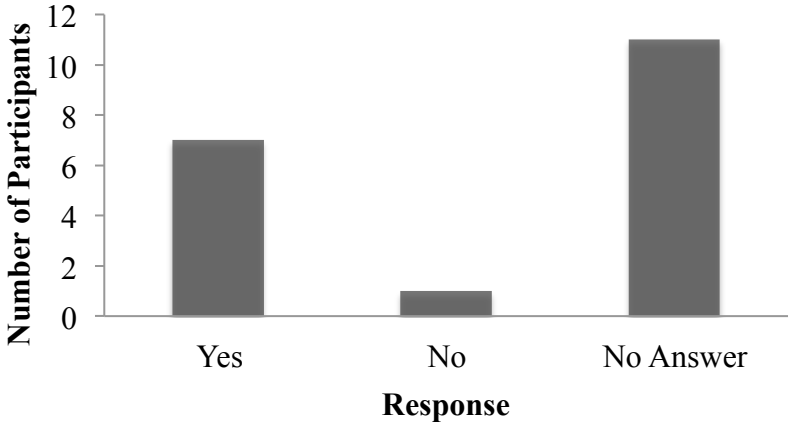


*Figure 5.* "Within the past two years, have you administered any Social-Emotional/Psycho-Behavioral tests including direct observation for D/HOH students?"

Those who responded yes to any of these questions were asked to estimate the number of times they had administered that kind of test over the past two years. Of the sixteen participants that responded yes to having administered cognitive/intelligence tests within the past two years, three reported administering these tests 100 or more times, four reported 26-99 times, three reported 10-25 times, and six reported 1-9 times. Of the four

participants that responded yes to having administered neuropsychological tests within the past two years, two reported 10-25 times, and two reported 1-9 times. Of the four participants that responded yes to having administered academic tests within the past two years, one reported administering these tests 100 or more times, one reported 10-25 times, and two reported 1-9 times. Finally, of the seven participants that responded yes to having administered social-emotional/psycho-behavioral tests (including direct observations) within the past two years, two reported administering these tests 100 or more times, three reported 26-99 times, one reported 10-25 times, and one reported 1-9 times. Figure 6 illustrates these data.

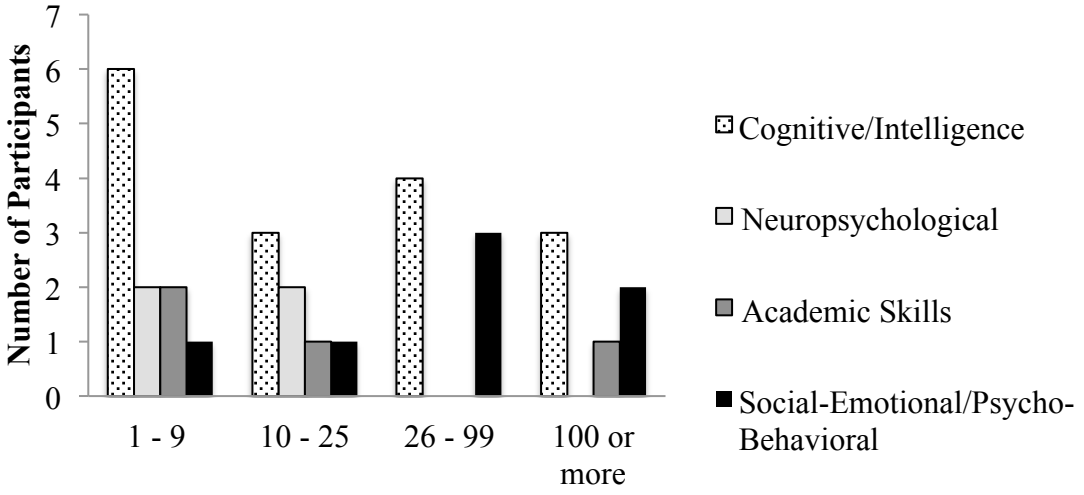


*Figure 6.* Number of test administrations categorized by assessment category administered over the past two years.

**Most used assessments.** Participants were asked to name four of their most used tests with the first response being the test they believed they used the most. For cognitive/intelligence, the top choices were the Wechsler Intelligence Scale for Children,

4th Edition (WISC-IV) (Wechsler, 2003b), Universal Nonverbal Intelligence Test (UNIT) (Bracken & McCallum, 1998), and Kaufman Assessment Battery for Children, 2nd Edition (KABC-II) (Kaufman & Kaufman, 2004a) (see *Figure 7)*. For neuropsychological, the top choices were the Delis-Kaplan Executive Function System (D-KEFS) (Delis, Kaplan, & Kramer, 2001), Wide Range Assessment of Memory and Learning, 2nd Edition (WRAML-2) (Sheslow & Adams, 2003), and the Rey Complex Figure Test (Meyers & Meyers, 1995) (see *Figure 8)*. For social-emotional/psycho-behavioral, the top choices were the Behavior Assessment System for Children, 2nd Edition (BASC-2) (Reynolds & Kamphaus, 2006) and the Vineland Adaptive Behavior Scales, 2nd Edition (Vineland-II) (Sparrow, Cicchetti, & Balla, 2005) (see *Figure 9)*. Finally, for academic skills, the top choices were the Woodcock-Johnson, 3rd Edition (WJ-III) (Woodcock, McGrew, & Mather, 2001), Kaufman Test of Educational Achievement, 2nd Edition (KTEA-II) (Kaufman & Kaufman, 2004b), and the Wechsler Individual Achievement Test, 2nd Edition (WIAT-II) (Wechsler, 2001) (see *Figure 10*). When analyzing all these tests together, some frequencies changed. The frequencies changed due to the fact that some tests were more commonly chosen overall when tallying all responses from the first category to the fourth.

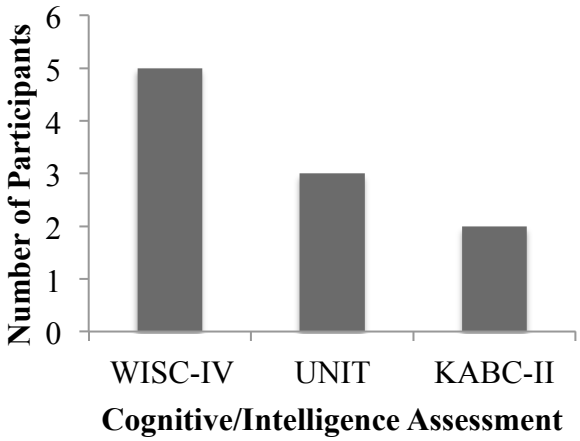


*Figure 7.* Most common cognitive/intelligence assessments reported as being the first choice used by participants.

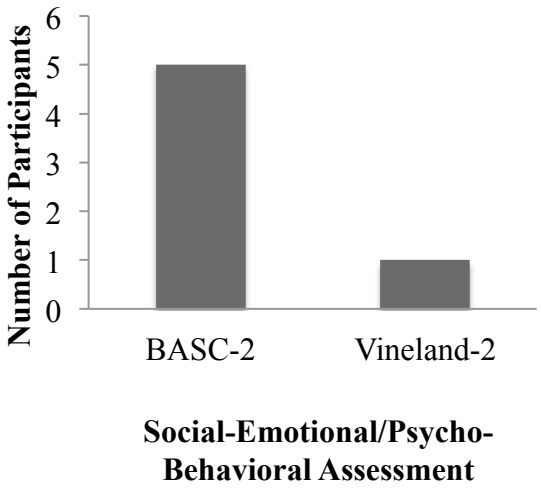


*Figure 8.* Most common social-emotional/psycho-behavioral assessments including direct observation reported as being the first choice used by participants.

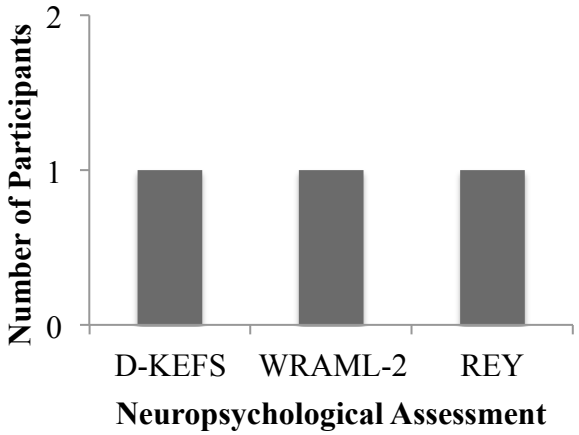


*Figure 9.* Most common neuropsychological assessments including reported as being the first choice used by participants.

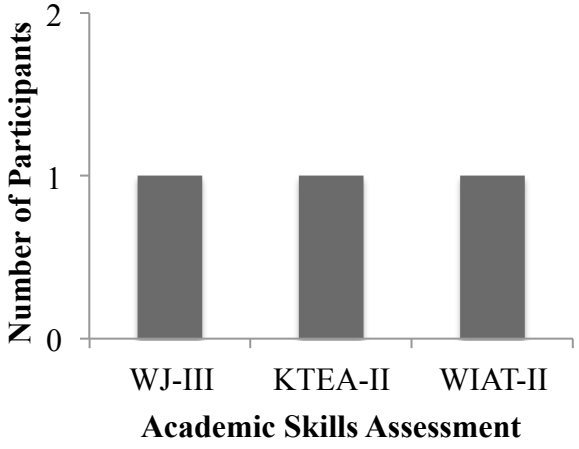


*Figure 10.* Most common academic skills assessments reported as being the first choice used by participants.

**Percentage of time.** Participants also were asked to estimate the percentages of time they chose to administer these tests. In regards to cognitive/intelligence tests, the percentage of time participants who reported most commonly administering the WISC-IV was between 40% and 80%. Two participants chose not to respond. The exact percentages of the other three participants were 40%, 45%, and 80%. For the UNIT,

participants reported choosing this test 50% and 52% of the time with one participant opting to not respond. Finally, the KABC-II was reported as being chosen by participants 40% and 49% of the time with the D/HOH population.

When analyzing the two most popular first choices by professionals for social-emotional/psycho-behavioral tests, those participants who most often chose to administer the BASC-2 reported using it 30% (note: this participant reported using the Conners-3 30% of the time as well but ranked it as the third most chosen test), 40%, 100%, 53%, and 25% (note: this participant respond using four tests of equal value. These were the BASC-2, Beck Depression Inventory (BDI), Minnesota Multiphasic Personality Inventory (MMPI), and the Rorschach test) of the time with the D/HOH.

Next, neuropsychological tests were analyzed for the percentage of time used with the D/HOH population. Only three participants responded, and each chose a different test he or she administered the most. The participant who used the D-KEFS reported it was their first choice 100% of the time. The participant who chose the WRAML-2 reported using it 85% of the time with the NEPSY-2 8% of the time and the Wisconsin Card Sort 7% of the time. Finally, the participant who chose the Rey Complex Figure Test reported using it 25% of the time and wrote three more neuropsychological tests, the Signed Paired Associates Test, the Beery-Buktenica Developmental Test of Visual-Motor Integration (Beery VMI), and the Test of Everyday Attention for Children: Select Subtests (TEA-Ch: Select Subtests) that were each used another 25% of the time.

Finally, academic-skills tests were evaluated for percentage of time used. Again, only three participants chose to respond. The participant who responded using the WJ-III most often reported that it was the test chosen 60% of the time with the D/HOH. The

participant who chose the KTEA-II reported using it 85% of the time. The third participant chose the WIAT-II as the most preferred test; however, this participant also replied using it 25% of the time with the Peabody Individual Achievement Test-Revised-Normative Update (PIAT-R-NU) and the Woodcock-Johnson III Tests of Achievement (WJ III ACH), an additional 25% of the time, each. This participant left the fourth test option blank yet reported using the blank test another 25% of the time.

**Test modifications**. A key interest of this study was to see if the professionals in the study made modifications during the testing. Specifically, the interest was to see how often specific modifications were made during standardized test administration over the last two years. Participants, using a Likert scale (0 = never making the specified modification to 7 = always making the specified modification), were asked about five areas in which they may make modifications. These areas were (a) "Elimination or reduction of verbal items," (b) "Use of an interpreter," (c) "Administration in a form of sign language," (d) "I have not made any modifications to the test for any assessments," and (e) "Other" (where participants were asked to specify the modification they used). This format was applied to all assessment categories for each of the four tests mentioned. In terms of cognitive/intelligence tests, Table 3 lists the 25 different tests that were mentioned by 15 participants.

Table 3

*Cognitive/Intelligence Tests*

| **Test Name** | ***n*** |
|---|---|
| Wechsler Intelligence Scale for Children, 4th Edition (WISC-IV) | 7 |
| Universal Nonverbal Intelligence Test (UNIT) | 6 |
| Wechsler Non-Verbal (WNV) | 5 |
| Stanford Binet, 5th Edition (SB-5) | 5 |
| Comprehensive Test of Nonverbal Intelligence, 2nd Edition (CTONI-2) | 4 |
| Differential Ability Scales – II (DAS-II) | 4 |
| Kaufman Assessment Battery for Children, 2nd Edition (KABC-II) | 3 |
| Woodcock-Johnson | 3 |
| Leiter – 3 | 2 |
| Leiter – R | 2 |
| Woodcock-Johnson, 3rd Edition (WJ-III) | 2 |
| Wechsler Adult Intelligence Scale, 4th Edition (WAIS-IV) | 2 |
| Kaufman Assessment Battery for Children (KABC) | 2 |
| Wechsler Intelligence Scale for Children, Nonverbal Subtests (WISC NV) | 1 |
| Comprehensive Test of Nonverbal Intelligence (CTONI) | 1 |
| Wechsler Preschool and Primary Scale of Intelligence, 3rd Edition (WPPSI-III) | 1 |
| Developmental Assessment of Young Children, 2nd Edition (DAYC-2) | 1 |
| Stanford Binet | 1 |
| Wechsler Intelligence Scale for Children | 1 |
| All Wechsler | 1 |
| Central Institute for the Deaf Preschool and Performance Scale | 1 |
| Leiter | 1 |
| Wechsler Preschool and Primary Scale of Intelligence, 4th Edition (WPPSI-IV) | 1 |
| Wechsler Intelligence Scale for Children Integrated | 1 |

Thus, there is significant variability among test choices and results. The analysis included all tests separately. For example, some participants specified "Wechsler Non-Verbal" whereas some chose to be more specific and specified "WAIS non-verbal" or "WISC non-verbal." Treating the responses in this fashion can identify more specific modifications that are made by these professionals but, at the same time, can limit the generalizability of results. Unfortunately, some tests that were reported as being used were not evaluated in subsequent questions through the Likert scale.

Ten participants continued with the survey to answer the Likert scale regarding modifications made during assessments. In regards to "elimination or reduction of verbal items," values for most tests were nearer the higher end of the scale. Means were not assessed due to small numbers of participants and large ranges in particular tests as these statistics could result in a potentially inaccurate estimate of the population. Table 4 shows these results. Here, tests that are heavily loaded with language were more likely to show higher responses on the Likert scale, whereas tests that either do not require much language or are nonverbal were less likely to eliminate or reduce verbal items.

Table 4

*Cognitive/Intelligence Tests: "Elimination or Reduction of Verbal Items"*

| **Test Name** | **Likert Scale Responses (0-7)** |
|---|---|
| Wechsler Intelligence Scale for Children, 4th Edition (WISC-IV) | 5, 5, 6, 7, Ø*, Ø, Ø |
| Universal Nonverbal Intelligence Test (UNIT) | 1, 1, 2, Ø, Ø, Ø |
| Wechsler Non-Verbal (WNV) | 1, 1, 7, 7, Ø |
| Stanford Binet, 5th Edition (SB-5) | 6, 7, 7, 7, Ø |
| Comprehensive Test of Nonverbal Intelligence, 2nd Edition (CTONI-2) | 1, 1, 7, Ø |
| Differential Ability Scales – II (DAS-II) | 6, 6, 7, Ø |
| Kaufman Assessment Battery for Children, 2nd Edition (KABC-II) | 6, 7, 7 |
| Woodcock-Johnson | 5, 6, Ø |
| Leiter – 3 | 1, 1 |
| Leiter – R | 1, 7 |
| Woodcock-Johnson, 3rd Edition (WJ-III) | 5, Ø |
| Wechsler Adult Intelligence Scale, 4th Edition (WAIS-IV) | 5, Ø |
| Kaufman Assessment Battery for Children (KABC) | 2, 6 |
| Wechsler Intelligence Scale for Children, Nonverbal (WISC NV) | Ø |
| Comprehensive Test of Nonverbal Intelligence (CTONI) | Ø |
| Wechsler Preschool and Primary Scale of Intelligence, 3rd Edition (WPPSI-III) | Ø |
| Developmental Assessment of Young Children, 2nd Edition (DAYC-2) | Ø |
| Stanford Binet | Ø |
| Wechsler Intelligence Scale for Children | 5 |
| All Wechsler | 6 |
| Central Institute for the Deaf Preschool and Performance Scale | 6 |
| Leiter | 1 |
| Wechsler Preschool and Primary Scale of Intelligence, 4th Edition (WPPSI-IV) | Ø |
| Wechsler Intelligence Scale for Children Integrated | 3 |

* Ø is used to indicate participate wrote in the test but did not respond in regards to the modifications for "administration in a form of sign language."

For all cognitive/intelligence tests listed, participants responded with a "1" on each test for "use of an interpreter." This means that all participants in this study that

chose to answer questions based on modifications very rarely or rarely used an interpreter during their assessments. There were no data reported for the tests WISC NV, WAIS NV, CTONI, WPPSI-III, DAYC-2, Stanford Binet, or the WPPSI-IV.

In regards to "administration in a form of sign language," responses varied based on the test. Table 5 presents these results. For example, all participants ($n$ = 3) who reported use of the KABC-II responded with a "7" ("always making the specified modification"). In contrast, for the CTONI-2, two participants replied with a "1" and one with a "7," a large range of differences. Again, there were no data reported for the tests WISC NV, WAIS NV, CTONI, WPPSI-III, DAYC-2, Stanford Binet, or the WPPSI-IV.

Table 5

*Cognitive/Intelligence Tests: "Administration in a Form of Sign Language"*

| **Test Name** | **Likert Scale Responses (0-7)** |
|---|---|
| Wechsler Intelligence Scale for Children, 4th Edition (WISC-IV) | 6, 6, 7, 7, Ø*, Ø, Ø |
| Universal Nonverbal Intelligence Test (UNIT) | 1, 2, 4, Ø, Ø, Ø |
| Wechsler Non-Verbal (WNV) | 1, 7, 7, 7, Ø |
| Stanford Binet, 5th Edition (SB-5) | 4, 7, 7, 7, Ø |
| Comprehensive Test of Nonverbal Intelligence, 2nd Edition (CTONI-2) | 1, 1, 7, Ø |
| Differential Ability Scales – II (DAS-II) | 6, 6, 7, Ø |
| Kaufman Assessment Battery for Children, 2nd Edition (KABC-II) | 7, 7, 7 |
| Woodcock-Johnson | 6, 7, Ø |
| Leiter – 3 | 1, 7 |
| Leiter – R | 2, 7 |
| Woodcock-Johnson, 3rd Edition (WJ-III) | 5, Ø |
| Wechsler Adult Intelligence Scale, 4th Edition (WAIS-IV) | 7, Ø |
| Kaufman Assessment Battery for Children (KABC) | 3, 7 |
| Wechsler Intelligence Scale for Children, Nonverbal (WISC NV) | Ø |
| Comprehensive Test of Nonverbal Intelligence (CTONI) | Ø |
| Wechsler Preschool and Primary Scale of Intelligence, 3rd Edition (WPPSI-III) | Ø |
| Developmental Assessment of Young Children, 2nd Edition (DAYC-2) | Ø |
| Stanford Binet | Ø |
| Wechsler Intelligence Scale for Children | 7 |
| All Wechsler | 7 |
| Central Institute for the Deaf Preschool and Performance Scale | 7 |
| Leiter | 7 |
| Wechsler Preschool and Primary Scale of Intelligence, 4th Edition (WPPSI-IV) | Ø |
| Wechsler Intelligence Scale for Children Integrated | 4 |

* Ø is used to indicate participate wrote in the test but did not respond in regards to the modifications for "administration in a form of sign language."

The statement "I have not made any modifications to the test for any assessments" appeared to have some variability within and between tests. For example, the CTONI-2

ranged from “1” to “7” whereas the UNIT ranged from “1” to “6” and some tests remained fairly constant with the responses “1” and “2;” this can be seen in Table 6. Note that given the way this statement is worded, higher values indicate that those participants agree that they do *not* make modifications for that test; lower values indicate that those participants *do* make modifications. Again, there were no data reported for the tests WISC NV, WAIS NV, CTONI, WPPSI-III, DAYC-2, Stanford Binet, or the WPPSI-IV.

Table 6

*Cognitive/Intelligence Tests: "I Have Not Made any Modifications to the Test for any Assessments"*

| **Test Name** | **Likert Scale Responses (0-7)** |
|---|---|
| Wechsler Intelligence Scale for Children, 4th Edition (WISC-IV) | 1, 1, 1, 3, Ø*, Ø, Ø |
| Universal Nonverbal Intelligence Test (UNIT) | 1, 1, 6, Ø, Ø, Ø |
| Wechsler Non-Verbal (WNV) | 1, 1, 1, 7, Ø |
| Stanford Binet, 5th Edition (SB-5) | 1, 1, 2, 3, Ø |
| Comprehensive Test of Nonverbal Intelligence, 2nd Edition (CTONI-2) | 1, 1, 7, Ø |
| Differential Ability Scales – II (DAS-II) | 2, 2, 1, Ø |
| Kaufman Assessment Battery for Children, 2nd Edition (KABC-II) | 1, 1, 2 |
| Woodcock-Johnson | 1, 1, Ø |
| Leiter – 3 | 1, 7 |
| Leiter – R | 1, 1 |
| Woodcock-Johnson, 3rd Edition (WJ-III) | 1, Ø |
| Wechsler Adult Intelligence Scale, 4th Edition (WAIS-IV) | 1, Ø |
| Kaufman Assessment Battery for Children (KABC) | 1, 2 |
| Wechsler Intelligence Scale for Children, Nonverbal (WISC NV) | Ø |
| Comprehensive Test of Nonverbal Intelligence (CTONI) | Ø |
| Wechsler Preschool and Primary Scale of Intelligence, 3rd Edition (WPPSI-III) | Ø |
| Developmental Assessment of Young Children, 2nd Edition (DAYC-2) | Ø |
| Stanford Binet | Ø |
| Wechsler Intelligence Scale for Children | 1 |
| All Wechsler | 1 |
| Central Institute for the Deaf Preschool and Performance Scale | 1 |
| Leiter | 1 |
| Wechsler Preschool and Primary Scale of Intelligence, 4th Edition (WPPSI-IV) | Ø |
| Wechsler Intelligence Scale for Children Integrated | 2 |

* Ø is used to indicate participate wrote in the test but did not respond in regards to the modifications for "administration in a form of sign language."

The final category was "Other" and participants were requested to report the changes they typically made when giving other kinds of tests. Only one participant reported a modification, which was for the CTONI-2 and was labeled, "Touch Scanning Response." All other participants who scored their respective tests using the Likert Scale did not fill in the different modification that they made. Thus, professionals may be making other modifications; however, the current data do not indicate what these may be.

Next, neuropsychological tests were evaluated. There were eight different tests that were mentioned by three participants. Four participants reported having administered these tests over the past two years; however, one participant did not choose to fill in the tests that were used. The tests that were used were the Delis-Kaplan Executive Function System (D-KEFS), Wide Range Assessment of Memory and Learning, 2nd Edition (WRAML-2), NEPSY, 2nd Edition (NEPSY-II), Wisconsin Card Sort, Rey Complex Figure Test, Signed Paired Associates Test, Beery-Buktenica Developmental Test of Visual-Motor Integration (Beery VMI), and Test of Everyday Attention for Children: Select Subtests (TEA-Ch: Select Subtests). There were no overlaps with tests showing the variability that may exist within neuropsychological evaluations in the D/HOH population. All tests were evaluated in some way using the Likert scale for the questions regarding modifications.

In regards to "elimination or reduction of verbal items," means were not assessed due to small numbers of participants and lack of overlap between tests. Table 7 shows the responses given by participants. One participant chose not to answer the section on elimination or reduction of verbal items resulting in only four tests having data. For all neuropsychological tests listed, participants responded with a "1" on each test for "use of

an interpreter." This means that all participants very rarely or rarely used an interpreter during their assessments with neuropsychological tests. Participants were very likely to administer these tests in a form of sign language with all responses being a "6" or "7;" this can be seen in Table 8. Finally, Table 9 shows the distribution of responses for the statement "I have not made any modifications to the test for any assessments." No participants reported making any other modifications to these tests.

Table 7

*Neuropsychological Assessments: "Elimination or Reduction of Verbal Items"*

| Test Name | Likert Scale Responses (0-7) |
|---|---|
| Delis-Kaplan Executive Function System (D-KEFS) | 4 |
| Wide Range Assessment of Memory and Learning, 2nd Edition (WRAML-2) | 6 |
| NEPSY, 2nd Edition (NEPSY-II) | 7 |
| Wisconsin Card Sort | 1 |
| Rey Complex Figure Test | Ø |
| Signed Paired Associates Test | Ø |
| Beery-Buktenica Developmental Test of Visual-Motor Integration (Beery VMI) | Ø |
| Test of Everyday Attention for Children: Select Subtests (TEA-Ch: Select Subtests) | Ø |

* Ø is used to indicate participate wrote in the test but did not respond in regards to the modifications for "elimination or reduction of verbal items."

Table 8

*Neuropsychological Assessments: "Administration in a Form of Sign Language"*

| Test Name | Likert Scale Responses (0-7) |
|---|---|
| Delis-Kaplan Executive Function System (D-KEFS) | 7 |
| Wide Range Assessment of Memory and Learning, 2nd Edition (WRAML-2) | 6 |
| NEPSY, 2nd Edition (NEPSY-II) | 6 |
| Wisconsin Card Sort | 6 |
| Rey Complex Figure Test | 7 |
| Signed Paired Associates Test | 7 |
| Beery-Buktenica Developmental Test of Visual-Motor Integration (Beery VMI) | 7 |
| Test of Everyday Attention for Children: Select Subtests (TEA-Ch: Select Subtests) | 7 |

Table 9

*Neuropsychological Assessments: "I Have Not Made any Modifications to the Test for any Assessments"*

| Test Name | Likert Scale Responses (0-7) |
|---|---|
| Delis-Kaplan Executive Function System (D-KEFS) | 6 |
| Wide Range Assessment of Memory and Learning, 2nd Edition (WRAML-2) | 1 |
| NEPSY, 2nd Edition (NEPSY-II) | 1 |
| Wisconsin Card Sort | 1 |
| Rey Complex Figure Test | 1 |
| Signed Paired Associates Test | 7 |
| Beery-Buktenica Developmental Test of Visual-Motor Integration (Beery VMI) | Ø |
| Test of Everyday Attention for Children: Select Subtests (TEA-Ch: Select Subtests) | 1 |

* Ø is used to indicate participate wrote in the test but did not respond in regards to the modifications for "I have not made any modifications to the test for any assessments."

Academic-skills tests were similar to neuropsychological tests. There were seven different tests that were mentioned by three participants with one test being mentioned by two participants. These tests were the Kaufman Test of Educational Achievement, 2nd Edition (KTEA-II), Woodcock-Johnson, 3rd Edition (WJ-III), Wide Range Achievement Test 4 (WRAT4), Peabody Individual Achievement Test (PIAT), Wechsler Individual Achievement Test, 2nd Edition (WIAT-II), Peabody Individual Achievement Test-Revised-Normative Update (PIAT-R-NU), and the Woodcock-Johnson III Tests of

Achievement (WJ III ACH). The KTEA-II was the one test mentioned by two participants. All tests were evaluated using the Likert scale for the questions regarding modifications. Means are again not assessed due to the large variability in tests mentioned.

As has been seen thus far, participants again responded with a "1" on each test for "use of an interpreter." This means that all participants very rarely or rarely used an interpreter during their assessments with academic-skills tests. For "administration in a form of sign language," all participants responded with a "7;" they always administered these tests in some form of sign language. "Elimination or reduction of verbal items" showed variability in responses, as is shown in Table 10. Two participants reported usually or always eliminating or reducing verbal items, whereas one reported very rarely eliminating or reducing verbal items. Finally, for the statement "I have not made any modifications to the test for any assessments" responses again varied and are presented in Table 11. The final category was "Other" and participants were requested to report the changes they typically made when giving academic-skills tests. Only one participant completed this section responding with a "1" for the KTEA-II and the PIAT. Unfortunately, this participant did not report the modifications made when working with these tests.

Table 10

*Academic Skills Tests: "Elimination or Reduction of Verbal Items"*

| Test Name | Likert Scale Response (0-7) |
|---|---|
| Kaufman Test of Educational Achievement, 2nd Edition (KTEA-II) | 1, 5 |
| Woodcock-Johnson, 3rd Edition (WJ-III) | 1 |
| Wide Range Achievement Test 4 (WRAT4) | 1 |
| Peabody Individual Achievement Test (PIAT) | 5 |
| Wechsler Individual Achievement Test, 2nd Edition (WIAT-II) | 7 |
| Peabody Individual Achievement Test-Revised-Normative Update (PIAT-R-NU) | 7 |
| Woodcock-Johnson III Tests of Achievement (WJ III ACH) | 7 |

Table 11

*Academic Skills Tests: "I Have Not Made any Modifications to the Test for any Assessments"*

| Test Name | Likert Scale Response (0-7) |
|---|---|
| Kaufman Test of Educational Achievement, 2nd Edition (KTEA-II) | 1, 6 |
| Woodcock-Johnson, 3rd Edition (WJ-III) | 6 |
| Wide Range Achievement Test 4 (WRAT4) | 6 |
| Peabody Individual Achievement Test (PIAT) | 1 |
| Wechsler Individual Achievement Test, 2nd Edition (WIAT-II) | 1 |
| Peabody Individual Achievement Test-Revised-Normative Update (PIAT-R-NU) | 1 |
| Woodcock-Johnson III Tests of Achievement (WJ III ACH) | 1 |

The last category, social-emotional/psycho-behavioral assessments (including direct observation), showed that seven participants reported administrating these types of

tests over the past two years. There were small overlaps with tests within this category, however still not enough to get accurate results to generalize the information. There were fourteen different tests that were mentioned by six participants. These methods mentioned were the Behavior Assessment System for Children, 2nd Edition (BASC-2), Direct Observation, Conners 3rd Edition (Conners-3), Clinical Interview, Achenbach System of Empirically Based Assessment (ASEBA), Behavior Evaluation Scale, 3rd Edition (BES-3), Behavior Assessment System for Children, Piers-Harris 2, Roberts Apperception Test for Children, 2nd Edition (Roberts-2), Vineland Adaptive Behavior Scales, 2nd Edition (Vineland-II), AAMR Adaptive Behavior Scales (ABS), Beck Depression Inventory (BDI), Minnesota Multiphasic Personality Inventory (MMPI), and the Rorschach Test. Again, participants responded with a "1" on each test for "use of an interpreter." This means that all participants very rarely or rarely used an interpreter during social-emotional/psycho-behavioral assessments. Table 12 reports the results from "Elimination or reduction of verbal items" and showed that for most tests, participants did not eliminate or reduce verbal items. Results can be seen in Table 13 for "administration in a form of sign language." Different tests showed different responses in regards to using sign language. Finally, Table 14 shows that the results from the Likert scale for the statement "I have not made any modifications to the test for any assessments" varied. The final category was "Other" and participants were requested to report the changes they typically made when giving social-emotional/psycho-behavioral tests. Only one participant completed this section responding with a "1" for the BASC-2, Direct Observations, Conners-3, and Clinical Interview. Unfortunately, this participant did not write-in the test modifications made when working with these tests.

Table 12

*Social-Emotional/Psycho-Behavioral Assessments including Direct Observation: "Elimination or Reduction of Verbal Items"*

| Test Name | Likert Scale Responses (0-7) |
|---|---|
| Behavior Assessment System for Children, 2nd Edition (BASC-2) | 1, 1, 1, Ø |
| Direct Observations | 1, 1 |
| Conners 3rd Edition (Conners-3) | 1, 1 |
| Clinical Interview | 1 |
| Achenbach System of Empirically Based Assessment (ASEBA) | 1 |
| Behavior Evaluation Scale, 3rd Edition (BES-3) | 1 |
| Behavior Assessment System for Children | 1 |
| Piers-Harris 2 | 4 |
| Roberts Apperception Test for Children, 2nd Edition (Roberts-2) | 1 |
| Vineland Adaptive Behavior Scales, 2nd Edition (Vineland-II) | 6 |
| AAMR Adaptive Behavior Scales (ABS) | Ø |
| Beck Depression Inventory (BDI) | Ø |
| Minnesota Multiphasic Personality Inventory (MMPI) | Ø |
| Rorschach Test | Ø |

* Ø is used to indicate participate wrote in the test but did not respond in regards to the modifications for "elimination or reduction of verbal items."

Table 13

*Social-Emotional/Psycho-Behavioral Assessments including Direct Observation: "Administration in a Form of Sign Language"*

| Test Name | Likert Scale Responses (0-7) |
|---|---|
| Behavior Assessment System for Children, 2nd Edition (BASC-2) | 1, 1, 2, 2 |
| Direct Observations | 1, 6 |
| Conners 3rd Edition (Conners-3) | 1, 2 |
| Clinical Interview | 6 |
| Achenbach System of Empirically Based Assessment (ASEBA) | 1 |
| Behavior Evaluation Scale, 3rd Edition (BES-3) | 1 |
| Behavior Assessment System for Children | 1 |
| Piers-Harris 2 | 5 |
| Roberts Apperception Test for Children, 2nd Edition (Roberts-2) | 6 |
| Vineland Adaptive Behavior Scales, 2nd Edition (Vineland-II) | 7 |
| AAMR Adaptive Behavior Scales (ABS) | 7 |
| Beck Depression Inventory (BDI) | 1 |
| Minnesota Multiphasic Personality Inventory (MMPI) | 1 |
| Rorschach Test | 7 |

Table 14

*Social-Emotional/Psycho-Behavioral Assessments including Direct Observation: "I Have Not Made any Modifications to the Test for any Assessments"*

| Test Name | Likert Scale Responses (0-7) |
|---|---|
| Behavior Assessment System for Children, 2nd Edition (BASC-2) | 6, 6, 7, 7 |
| Direct Observations | 1, 7 |
| Conners 3rd Edition (Conners-3) | 7, 7 |
| Clinical Interview | 7 |
| Achenbach System of Empirically Based Assessment (ASEBA) | 6 |
| Behavior Evaluation Scale, 3rd Edition (BES-3) | 7 |
| Behavior Assessment System for Children | 1 |
| Piers-Harris 2 | 7 |
| Roberts Apperception Test for Children, 2nd Edition (Roberts-2) | 1 |
| Vineland Adaptive Behavior Scales, 2nd Edition (Vineland-II) | 1 |
| AAMR Adaptive Behavior Scales (ABS) | 1 |
| Beck Depression Inventory (BDI) | 7 |
| Minnesota Multiphasic Personality Inventory (MMPI) | 7 |
| Rorschach Test | 7 |

**Psychometric importance.** The final section of the survey required participants to rank order their previously identified preferred tests based on their interpretation of psychometric importance, using a scale ranging from 1 (Most Important) to 6 (Least Important). Each number could be used only once. Two choices intentionally were included that do not address psychometric issues (e.g. Clinical Considerations and Flexibility of the Test). The six terms used were (a) "reliability," (b) "standardized administration procedures," (c) "flexibility of the test," (d) "normative data," (e) "clinical considerations," and (f) "validity." Each term was given a definition to reduce

discrepancies in participant's interpretations (see Appendix D). Psychometric importance was evaluated through means and standard deviations for each assessment category. One participant did not complete responses for two tests resulting in the total sample size of seventeen. Table 15 presents these data with means and standard deviations indicated in parentheses.

Table 15

*Means and Standard Deviations for Psychometric Importance by Assessment Category*

| | Assessment Category | | | |
|---|---|---|---|---|
| Psychometrics | Cognitive | Neuropsychological | Academic | Social-emotional |
| | (*n* = 35) | (*n* = 8) | (*n* = 8) | (*n* = 19) |
| Reliability | 3.74 (1.66) | 4.13 (1.36) | 3.88 (2.03) | 3.35 (1.54) |
| Administration | 3.60 (1.50) | 3.00 (0.53) | 3.50 (1.93) | 3.53 (1.28) |
| Flexibility | 3.71 (2.05) | 4.63 (1.77) | 2.87 (0.84) | 4.18 (1.67) |
| Normative Data | 3.63 (1.66) | 3.75 (1.91) | 3.63 (1.30) | 4.35 (1.73) |
| Clinical | 3.14 (1.46) | 1.50 (1.41) | 3.88 (2.47) | 2.29 (1.83) |
| Validity | 3.49 (1.95) | 4.13 (0.99) | 3.63 (1.92) | 3.29 (1.61) |

In terms of psychometric importance, three out of the four categories had the lowest mean for "clinical considerations" whereas the fourth category had the lowest mean in "flexibility of test." The lower the mean, the more importance that property was for participants when choosing tests. The least important psychometric property varied between categories. Cognitive/intelligence tests showed reliability with the highest mean

(or least important property); neuropsychological tests had flexibility with the highest mean; academic skills tests was tied for the highest mean between reliability and clinical considerations; and finally, social-emotional/psycho-behavioral resulted in normative data with the highest mean.

**Summary**

The results began with reporting the participant's demographic information, including hearing status, ASL fluency, and how they learned ASL. Next, the results of the Assessment Preference Questionnaire showed how often participants administered each of the five test categories and which tests were their preferences when working with D/HOH students. Percentages of time participants used the tests in regards to the previously mentioned most popular choices were then described.

Next, the results reported all test identified for each category, including how often participants made modifications to those tests. Finally, the results summarized psychometric importance data through a table of means and standard deviations for each test category.

## Discussion

The purpose of the present study was to examine professionals' assessment methods when working with the D/HOH. Based on the exploratory nature of the study, test choices for each area were reviewed through frequency tables. The following hypotheses were proposed: (a) The hearing status of examiners and their proficiency with sign-language will be significantly related to test preferences; specifically, those who are deaf and have fluency in ASL versus those who are not deaf and lack such fluency will use tests that are more sensitive to the D/HOH population; and (b) The test modifications participants choose will vary based on test choice, with similarities occurring across participants with identical tests.

Unfortunately, these hypotheses were not fully examined due to the limited number of responders. Instead, the test choices were evaluated based on frequencies and likelihood for test modifications for each test area. These areas were (a) cognitive; (b) social-emotional/psycho-behavioral, including direct observation; (c) neuropsychological; (d) speech and language; and (e) academic skills. Finally, each test area also required participants to rank order their previously identified preferred tests based on their interpretation of psychometric importance, using a scale ranging from 1 (Most Important) to 6 (Least Important). Each number could be used only once. Two choices were included that should not be included with psychometric importance (e.g. Clinical Considerations and Flexibility of the Test).

The discussion begins with addressing the implications and results for the percentage of time tests were chosen within each category, with the top test choices identified. Demographics of the D/HOH population are also described. Next,

cognitive/intelligence tests are described with the results and implications for each of the five areas of modifications made to each test. These areas were (a) "Elimination or reduction of verbal items," (b) "Use of an interpreter," (c) "Administration in a form of sign language," (d) "I have not made any modifications to the test for any assessments," and (e) "Other" (where participants were asked to specify the modification they used with the test they had mentioned). These modifications are also discussed for neuropsychological, academic-skills tests, and social-emotional/psycho-behavioral tests and the implications are considered. Finally, the implications of the results for psychometric principles of particular tests are described in detail. Limitations of the study and directions for future research are addressed followed by concluding thoughts.

**Demographics**

Participants included professionals from a Yahoo interest group, IG-SchPsyDeaf, who conduct cognitive, behavioral/social-emotional, neuropsychological, and academic testing with individuals who are D/HOH. The group consists of 392 members and the group description states that this restricted group is for school psychologists working with deaf and hard of hearing students and their families. The sample was fairly homogenous with the majority being women. Participants were all from the United States with one exception of someone reporting living in Ontario. Only two of the participants reported identifying themselves as deaf/Deaf and none reported being hard-of-hearing. The majority of participants reported being Caucasian, fluent in ASL, and had a Master's Degree plus 30 graduate credits or a Specialist Degree. Nearly half of the participants reported learning ASL by enrolling in courses or an academy for a number of years to become fluent/near fluent in the language and a third reported working full-time with the

D/HOH. The homogenous nature of the participant pool, shows that at least for this survey, American white females who reported being fluent in ASL and worked primarily with the D/HOH gave the majority of responses.

**Implications for Categories and Percentage of Test Administration**

The Assessment Preference Questionnaire addressed (a) cognitive; (b) social-emotional/psycho-behavioral, including direct observation; (c) neuropsychological; (d) speech and language; and (f) academic skills. No participants reported having administered any speech and language tests within the past two years. The lack of speech and language tests given by participants over the last two years indicates that perhaps the population of the Yahoo Interest Group was not the correct population with whom to administer this section or that professionals who administer these other psychoeducational test categories do not typically administer speech and language tests, at least to the population of D/HOH individuals. The majority of participants had administered cognitive/intelligence tests and socio-emotional/psycho-behavioral tests including direct observation within the past two years whereas only a select number of participants had administered neuropsychological and academic skills tests.

The top tests for first choice in cognitive/intelligence tests were the WISC-IV, UNIT, and KABC-II. This means when participants were asked to state their preferred test, these tests were the most likely to be seen as the most preferred. The WISC-IV was the most preferred test with five participants ranking it as their number-one test choice. The WISC-IV is not normed for the D/HOH population and has not included them for normative data as a special category. The second most chosen test was the UNIT with

three participants ranking it as their most preferred test followed by the KABC-II with two participants ranking it as their most preferred test.

The top tests in the social-emotional/psycho-behavioral category (including direct observation) were the BASC-II and Vineland-II. Both tests are self-report and examinees read statements and circle a response that agrees with their everyday behaviors and attitudes. The BASC-II was the most preferred test with five participants ranking it as their number-one test choice. The Vineland-II was the second test with one participant reporting administering it as the number-one choice.

The top choices for neuropsychological tests were the D-KEFS, WRAML-2, and the Rey Complex Figure Test. Only three participants reported having administered neuropsychological tests over the past two years and each participant reported a different test as the most preferred test when conducting these assessments. Finally, the top choices for academic-skills tests were the WJ-III, KTEA-II, and the WIAT-II.

The majority of participants who completed this survey administered the assessment areas between 1 and 25 times within the past two years. Thus, these participants in the sample did not heavily administer tests on a regular basis with their D/HOH clients or students. Cognitive/intelligence tests and social-emotional/psycho-behavioral were the most commonly used categories as frequency of time increased. Here, the bracket that included administering assessments 26-99 and 100 or more times within the past two years showed that more cognitive and social-emotional tests were being administered at higher occurrences than the other categories of assessment.

**Implications and Results for Cognitive/Intelligence Tests**

Due to the write-in aspect of the test preference category, a wide variety of tests were named. No assumptions were made when evaluating tests and thus grouping only occurred if participants wrote the same name of a test into the space provided. If WISC-IV and WISC were both written by different participants, these responses were reported as different tests. The WISC-IV and the UNIT were the two most popular tests overall. This is alarming because, due to the lack of validity of WISC scales for this population, the WISC-IV has been recommended with special caution for the D/HOH (Braden & Krouse, 2011). Although Braden and Krouse (2011) concluded that the research reviewed suggested that the WISC-IV was a stable test to use with D/HOH children in regards to internal consistency based on the scores from the WISC-III to now the WISC-IV, only eight of the 15 subtests and two of the five indexes were evaluated. Perhaps the internal consistency was supported but only for a small portion of the test, leaving a concern about the reliability of a comprehensive WISC-IV.

The UNIT was claimed by Maller (2000) to be the first test to have some evidence to support it as a fair measure of intelligence for D/HOH children. Krivistski et al. (2004) found that when using the UNIT with the D/HOH the results were consistent and roughly similar to the normative data. As stated in the introduction, the primary model measures memory and reasoning whereas the secondary model measures symbolic and nonsymbolic factors (Maller & French, 2004). The results showed that both models fit fairly well for both the standardization sample (children ages 5-17 years) and the deaf sample (children ages 5 to 17 years who used sign language as their primary mode of communication, identified no other disabilities, and enrolled in self-contained special-education classrooms). The fact that the models fit well with the deaf sample is

important, however, because the D/HOH population is heterogeneous, whereas the sample from Miller and French (2004) was specific to only a small portion of the population as a whole and therefore is not generalizable.

**Modifications.** Once the participants wrote in their cognitive/intelligence test preferences they used a Likert scale (0 = never making the specified modification and 7 = always making the specified modification), to assess five areas in which they may make modifications. These areas were (a) "Elimination or reduction of verbal items," (b) "Use of an interpreter," (c) "Administration in a form of sign language," (d) "I have not made any modifications to the test for any assessments," and (e) "Other" (where participants were then asked to specify the modification they used with the test they had mentioned). Unfortunately, these results are not generalizable, due to the large number of cognitive tests mentioned and the frequency of omitted responses.

***Elimination or reduction of verbal items: Cognitive.*** For the WISC-IV, SB5, DAS-II, KABC-II, Woodcock-Johnson, WJ-III, WAIS-IV, WISC, All Wechsler, and Central Institute for the Deaf Preschool and Performance Scale, participants showed agreement in reported higher Likert scores, meaning that they almost always or always eliminate or reduce verbal items for these tests. Likert scores for the UNIT, Leiter – 3, Leiter, and Wechsler Intelligence Scale for Children Integrated showed that participants were in agreement that they rarely or never eliminated or reduced the amount of verbal items for these tests. Finally, there was some variability with responses for WNV, CTONI-2, Leiter – R, and the KABC, with some participants responding that they often or always eliminated items whereas some responded that they rarely or never do. These tests seem to be the most concerning because participants were in disagreement about the

best ways to administer particular tests. We can assume, then, that these tests are being administered in many different ways. Without following the appropriate standardized administration procedures, the scores of each test will vary and be an inaccurate reflection of the individual's true cognitive abilities.

***Use of an interpreter: Cognitive.*** All participants responded with a "1" in this section indicating that all participants rarely use an interpreter when administrating cognitive/intelligence tests for the D/HOH. Fifty-eight percent of all participants classified themselves as being "fluent in ASL," and all participants reported having at least basic knowledge of ASL. This was a self-reported measure and there was no operational definition for fluency levels. Regardless, Interpreters/Transliterators (i.e., a transliterator is a person who is able to translate information in many different forms of sign language and oral language) certified by the Registry of Interpreters for the Deaf (RID) are not being brought in to help with these assessments. They are certified with the assumption that they are skilled in assessing the client's communication needs and can quickly adjust communication methods in order to help the examinee (Leigh et al., 1996). At this point, we cannot further assess the participants ASL ability but as no interpreters are brought in for assessments, there is a probability that miscommunications may be occurring during assessments.

***Administration in a Form of Sign Language: Cognitive.*** For the WISC-IV, DAS-II, KABC-II, Woodcock-Johnson, WJ-III, WAIS-IV, WISC, All Wechsler, Central Institute for the Deaf Preschool and Performance Scale, and the Leiter, participants reported higher scores, meaning that they almost always or always administer these tests in a form of sign language. As noted, not all participants reported full fluency in ASL.

This is concerning in that without full knowledge of ASL by the practitioner, this may make it harder for the client to ask and understand directions and clarifications. This could also result in misinterpreted answers with an increase of correct or incorrect markings, thereby adjusting a score inaccurately. None of the tests were reported by participants as only rarely administered in a form of sign language. With that said, some tests were variable in responses. The UNIT, WNV, SB-5, CTONI-2, Leiter – 3, Leiter – R, and the KABC were all variable in participant's responses of how often they administered these tests in a form of sign language. Some participants reported they rarely administer these tests in a form of sign language whereas some reported that they always or often administer these tests in a form of sign language. The variability of these responses may relate to the specific D/HOH population that respondents work with and the overall use of oral or signed language.

***I Have Not Made any Modifications to the Test for any Assessments: Cognitive.*** Here, higher values indicate that those participants agree that they do *not* make modifications for that test; lower values indicate that those participants *do* make modifications. Participants reported unanimously agreeing that they make modifications for the WISC-IV, SB5, DAS-II, KABC-II, Woodcock-Johnson, Leiter – R, WJ-III, WAIS-IV, KABC, WISC, All Wechsler, Central Institute for the Deaf Preschool and Performance Scale, Leiter, and the Wechsler Intelligence Scale for Children Integrated. Unfortunately, we know that modifications are being made in regards to these tests but we do not know how variable the modifications are. No participants collectively reported never making modifications. Some tests, however, did show a range of responses in likelihood of modifications. The UNIT, WNV, CTONI-2, and Leiter – 3 showed that

some participants reported that they do make modifications for these tests and some do not. This, again, is changing the ways in which these tests are being administered based on the assessor and examinee. It is unknown, based on this research, what these modifications are and how significantly they alter the psychometric properties of the test.

**Implications and Results for Neuropsychological Assessments**

Again, no assumptions were made when evaluating tests and thus grouping only occurred if participants wrote the same name of a test into the space provided. When conducting a literature review on neuropsychological tests for the D/HOH, only seven peer-reviewed articles were displayed with the search terms "neuropsychological assessments for the deaf" and "neuropsychological tests for the deaf." No results were produced with these phrases were used with the hard-of-hearing. From the resulting articles, only one article was of consideration, however, it studied particular assessments with children who received cochlear implants early in life.

**Modifications.** Like the cognitive category, once the participants wrote in their neuropsychological test preferences, they used the Likert scale to assess the five areas in which they may make modifications. Unfortunately, these results are not generalizable, because only four participants reported having administered these types of tests over the past two years. The participants all named different tests so there were no overlapping of tests. Additionally, they are not generalizable due to the limited number of tests mentioned and omitted responses.

***Elimination or reduction of verbal items: Neuropsychological.*** Four tests were not rated in regards to this subsection. With those tests excluded, four tests were left. These responses varied with rare elimination or reduction of verbal items for the

Wisconsin Card Sort, almost always for the WRAML-2, always for the NEPSY-II and sometimes for the D-KEFS. Unfortunately, this information is insufficient to come to a conclusion about these modifications.

***Use of an interpreter: Neuropsychological.*** Identically to the results from cognitive/intelligence tests, all participants responded with a "1" in this section indicating that all participants rarely use an interpreter when administrating neuropsychological tests for the D/HOH.

***Administration in a Form of Sign Language: Neuropsychological.*** For all eight of the tests mentioned, participants reported almost always or always administering these tests in a form of sign language. Again, we did not ask the participants to expand on their responses and the types of sign language in which they choose to communicate. Overall, as long as the practitioner is able to communicate effectively and in accordance with the client's language abilities, this is a positive finding.

***I Have Not Made any Modifications to the Test for any Assessments: Neuropsychological.*** Based on data provided, participants rarely made any additional modifications in this category. The Beery VMI was excluded as the participant who mentioned this test omitted the response. The other two tests were reported with acknowledging frequent modifications. One participant who reported using the Signed Paired Associates Test, however, reported always making modifications to this specific test. The participant did not expand on this rating and no further information was obtained. The other test, the D-KEFS, was reported as almost always being modified. Similarly to the Signed Paired Associates Test, no further modification information was available. As all responses were 1, 6, and 7s, it is possible that the participants did not

understand the statement or may have become confused with the double negative included. Thus, these responses should be interpreted with caution.

**Implications and Results for Academic Skills Assessments**

Again, no assumptions were made when evaluating tests and thus grouping only occurred if participants wrote the same name of a test into the space provided. No peer-reviewed articles were found on a literature review for academic-skills testing for the tests mentioned by participants for the deaf and/or hard-of-hearing.

**Modifications.** Similar to the previous categories, once the participants wrote in their academic-skills test preferences, they used the Likert scale to assess the five areas in which they may make modifications. Unfortunately, these results are not generalizable, as only three participants reported having administered seven types of tests over the past two years. One test, KTEA-II, was mentioned twice. Additionally, the results are not generalizable due to the limited number of tests mentioned and omitted responses.

***Elimination or reduction of verbal items: Academic Skills.*** The KTEA-II showed variability within this section. One participant responded with a score indicating that elimination or reduction of verbal items are happening more than half the time whereas another participant responded saying that he or she rarely eliminated or reduced verbal items on this test. If a professional is working with another professional who has administered some of these tests to the D/HOH it will be important to address modifications and language use and ability in order to get a better understanding of the information measured and reported. Those that reported the WJ-III and the WRAT4 responded that they rarely changed verbal items. The PIAT had a score indicating that elimination or reduction of verbal items occurs more than half the time. Finally, the

WIAT-II, PIAT-R-NU, and WJ III ACH were reported by their participants to be tests in which they always eliminated or reduced verbal items.

***Use of an interpreter: Academic Skills.*** As has been seen thus far, participants again responded with a "1" on each test for "use of an interpreter." This means that all participants very rarely or rarely used an interpreter during their assessments with academic-skills tests.

***Administration in a Form of Sign Language: Academic Skills.*** Similar to the results found in the neuropsychological section, all participants in regards to academic-skills tests responded with a "7" or that they always administered these tests in some form of sign language.

***I Have Not Made any Modifications to the Test for any Assessments: Academic Skills.*** The KTEA-II showed variability within this section. One participant responded with a score indicating that he or she rarely made any modifications to this test whereas another participant reported almost always making modifications. Although these are only two people that are administering this test to the D/HOH, it is concerning that one makes modifications whereas the other does not. What population does each professional work with, what is the average oral and signing skills of clients, are modifications being made that are within the technical manuals? The score for the WJ-III and the WRAT4 showed that these participants almost never make modifications whereas those that responded with the PIAT, PIAT-R-NU, WIAT-II, and WJ III ACH almost always make modifications. Again, as all responses were 1, 6, and 7s, it is possible that the participants did not understand the statement or may have become confused with the double negative included.

**Implications and Results for Social-Emotional/Psycho-Behavioral Assessments (including direct observation)**

Again, no assumptions were made when evaluating tests and thus grouping only occurred if participants wrote the same name of a test into the space provided. The Deaf Acculturation Scale (DAS) is one of the first measures that is culturally sensitive towards the Deaf culture and meets relatively high psychometric standards, making it an important testing tool for the D/HOH. Unfortunately, no participants within this section mentioned this test.

**Modifications.** Finally, once again, after the participants wrote in their social-emotional/psycho-behavioral tests (including direct observation) preferences, they used the Likert scale (0 = never making the specified modification and 7 = always making the specified modification) to assess the five areas in which they may make modifications. Once again, these results are not generalizable because there were fourteen different tests that were mentioned by six participants. Unlike the neuropsychological test category, there were a few overlaps mentioned.

***Elimination or reduction of verbal items: Social-Emotional/Psycho-Behavioral.*** Unlike other areas, there was no variability within overlapping tests. In regards to elimination or reduction of verbal items, all tests except two, in which participants filled in a response, were given a score of a "1." This means that rarely are they reducing or eliminating verbal items. One participant who reported using the Vineland-II responded with a score of "6" meaning that he or she nearly always reduced or eliminated verbal items. Finally, one participant who reported the Piers-Harris 2 reported about half the time modifying verbal items on this test. Most of the tests mentioned are questionnaires

that ask participants to rate how often a statement is occurring in regards to their thoughts and behaviors. The tests are written in English, thus depend on the participant's language ability, and may be more challenging for some D/HOH individuals.

***Use of an interpreter: Social-Emotional/Psycho-Behavioral.*** As has been a pattern for all assessment areas, participants, again, responded with a "1" on each test for "use of an interpreter." This means that all participants very rarely or rarely used an interpreter during social-emotional/psycho-behavioral assessments.

***Administration in a Form of Sign Language: Social-Emotional/Psycho-Behavioral.*** There appeared to be more variability within this category. Some participants reported frequent administration of tests in a form of sign language whereas others reported rare administration in a form of sign language. All participants rated their tests and it was found that rarely do the participants administer the BASC-2, Conners-3, ASEBA, BES-3, BASC, BDI, and the MMPI in a form of sign language. All of these tests are self-reports in which a student will read a presented statement and rate how accurate it is in relation to their daily activities, behaviors, and/or feelings. These tests can be completed independently if the student is able to understand and interpret every statement. In contrast, participating practitioners always or almost always administered Clinical Interviews, Piers-Harris 2, Roberts-2, Vineland-II, ABS, and the Rorschach test in a form of sign language. Finally, Direct Observations varied with one participant saying he or she rarely used a form of sign language and another reporting almost always using a form of sign language.

***I Have Not Made any Modifications to the Test for any Assessments: Social-Emotional/Psycho-Behavioral.*** Again, higher values indicate that those participants

agree that they do *not* make modifications for that test; lower values indicate that those participants *do* make modifications. The four participants who reported using the BASC-2, scored the test with "6" and "7." This means that these participants are never or rarely making modifications to this test. Similarly, the two participants who reported using the Conners-3, both reported never making modifications to this test. The participants who reported using the BES-3, Clinical Interview, Piers-Harris 2, BDI, MMPI, and the Rorschach test all indicated they never make modifications. The BASC, Roberts-2, Vineland-II, and ABS all had a score of "1" meaning that for these tests, the participant nearly always is making modifications. Finally, Direct Observations were variable with one participant saying he or she never made modifications and one reporting nearly always making modifications. Again, as all responses were 1, 6, and 7s, it is possible that the participants did not understand the statement or may have become confused with the double negative included.

**Implications and Results for Psychometric Importance**

The final section of the survey required participants to rank order their previously identified preferred tests based on their interpretation of psychometric importance, using a scale ranging from 1 (Most Important) to 6 (Least Important). Each number could be used only once. Two choices intentionally were included that do not address psychometric issues (i.e.. Clinical Considerations and Flexibility of the Test). The six terms used were (a) "reliability," (b) "standardized administration procedures," (c) "flexibility of the test," (d) "normative data," (e) "clinical considerations," and (f) "validity." Each term was given a definition to reduce discrepancies in participant's interpretations. The given definition for reliability was, "assuming the person has not

changed, the extent to which a test yields consistent results on retesting or across examiners." For standardized administration procedures the definition given was, "The process of administering assessments exactly as specified in the administration manual." Flexibility of the test was defined as "the extent to which I can modify prescribed administration procedures in different settings or with clients." Normative data included the definition of "the quality of the samples or samples used to determine normal level of test performance and the similarity of those samples to the current examinee." The definition given for clinical considerations was "your professional impressions or judgments of the test's value based on your experience using it." Finally, for validity, the definition was the "degree to which scientific research supports the interpretations of test scores: The test measures what it is claiming to measure."

For cognitive/intelligence tests, the lowest mean (or the most important reason as to why participants administer particular cognitive/intelligence tests) was clinical considerations, meaning overall, participants are choosing tests based on their professional impressions or judgment. It also had the smallest standard deviation out of the six options. The least important reason was reliability with flexibility of the test as a close runner up. This means that on average, the participants are least concerned about the reliability of a cognitive or intelligence test when deciding on a test to use. The flexibility of the test had the second highest mean, which is concerning as it does not address appropriate psychometric properties. Thus, that it was rated as unimportant is significant; however, it also had the highest standard deviation of all options. This means that participants were variable in their responses from high to low in their perceived importance of flexibility of the test.

When evaluating neuropsychological tests, the lowest mean (or the most important reason as to why participants administer particular neuropsychological tests) was by far clinical considerations, meaning overall, participants are choosing tests based on their professional impressions or judgment. Standardized procedures had the lowest standard deviation and the mean was about in the middle for importance. Finally, the least important reason as to why participants choose to administer neuropsychological tests was flexibility of the test. This is important, as it probably should not be of primary consideration when administering tests.

Academic Skills tests had the lowest mean (or the most important reason as to why participants administer particular academic skills tests) in terms of flexibility of the test. This also had the smallest standard deviation meaning that many participants were in agreement of its perceived importance when choosing a test. Thus overall, participants are choosing tests based on the extent to which they can modify prescribed administration procedures in different settings or with clients. Both reliability and clinical considerations had the highest means (or the least important reason as to why participants administer particular academic skills tests). Clinical considerations, however, had a larger standard deviation meaning that participants were more variable with their responses than for reliability.

Finally, social-emotional/psycho-behavioral tests (including direct observations) showed similar results. The lowest mean (or the most important reason as to why participants administer particular social-emotional/psycho-behavioral tests) was, by far, clinical considerations, meaning overall, participants are choosing tests based on their professional impressions or judgment. It also had the highest standard deviation but in

comparison to the other assessment areas, overall the standard deviations were the smallest for social-emotional/psycho-behavioral tests (including direct observations) out of all four areas. The highest mean (or the least important reason as to why participants administer particular social-emotional/psycho-behavioral tests) was normative data or the quality of the samples or samples used to determine normal level of test performance and the similarity of those samples to the current examinee. Thus, if there were no normative data for the D/HOH population, it was of the least importance to these participants.

**Summary of Primary Findings**

The participants included within this research were most likely to conduct cognitive/intelligence tests with their clients. Following that, social-emotional/psycho-behavioral tests were the most frequently administered tests. Academic skills tests were next with neuropsychological tests administered the least. Within this sample, there is a large variability within test choices for the D/HOH. There was not a single neuropsychological test repeated by participants. Thus, practitioners may be choosing tests based on their favorite choices. Another reason as to why this occurred is that there is no agreement within the population of individuals who work with the D/HOH of which tests have been created in the best manner for the D/HOH. There also may be a lack of overlap because participants ask themselves why a student requires an evaluation or re-evaluation and choose tests in this manner.

Another major finding is that based on the way participants filled out the survey, many tests that are in earlier editions are being administered to students. Tests are updated to new editions to hopefully address concerns from previous tests, such as psychometric properties, reorganization of administration to increase accuracy, and new

areas to address specific properties of functioning. By using earlier versions of tests, the true measure of a student's performance may be jeopardized.

A major implication of these findings is that practitioners (from this study) base test choices on their clinical consideration and flexibility of tests during administration. Participants are not evaluating D/HOH individuals primarily based on psychometric properties of each test. From literature reviews, it was found that normative data are significantly lacking for the D/HOH population but choosing a test based on one's clinical considerations could mean that even for the normative population psychometric principles are insufficient.

Finally, the sample included in this research was fairly homogenous whereas the D/HOH population is fairly heterogeneous. Apart from test considerations, the practitioners working with the D/HOH should also consider language, onset of deafness, communication within the home, and educational setting just to name a few. It is important that when working with such a specific population to take into consideration all their cultural differences.

**Limitations**

Despite the important findings within this study, there were several limitations. The first limitation is the small sample size ($N = 19$). In addition to the small sample size, the group was fairly homogenous. This made comparing sub-groups as stated in hypothesis (a): The hearing status of examiners and their proficiency with sign-language will be significantly related to test preferences; specifically, those who are deaf and have fluency in ASL versus those who are not deaf and lack such fluency will use tests that are more sensitive to the D/HOH population a challenge as there was not enough variation

within the small sample. As discussed in the results, the majority of participants reported being fluent in ASL. In addition, nearly all participants were females, Caucasian, and hearing. Therefore, comparing groups would result in a lack of generalizable results, as the deaf test choices would be based off one or two deaf practitioners..

After the study was completed, a reevaluation of the demographics questionnaire proved that although place of work and primarily role were studied, occupation was neglected. As the survey was hopeful to be circulated to all professionals working with the D/HOH, it cannot be assumed that all participants were school psychologists. Primary role was evaluated through the choices: Teaching, Counseling, Assessment/Report Writing, Psycho-educational/Behavioral Intervention, Consultation, and Other. This was oversight for the researchers thinking that these options would sufficiently cover all occupational possibilities for participants.

In addition to the small sample size, there were even fewer data as not all participants had administered particular categories of tests. The total sample size was nineteen but for particular questions only three people may have responded. This results in a lack of generalizability of the data. If the sample size had been larger and more heterogeneous, hypothesis "a" may have been able to be evaluated to determine if such differences existed between different groups. The lack of heterogeneity does not reduce the importance of the information gathered, however, it just reduced the ability to conduct comparison analyses. Another factor making it difficult was the fact that many people seemed to exit the survey early. There are most likely numerous reasons as to why participants chose to exit the survey. One example may be that the questionnaire was lengthy and participants found themselves too busy to have time to complete the

survey. Another example may be that participants were not given a possibility of a tangible reward, such as being entered into a gift card drawing. Without reward, they may have felt there were no repercussions for exiting the survey early. A final reason as to why responses were omitted may be that participants did not find the survey rewarding enough or of enough interest to take the time to complete. Furthermore, the absence of speech and language tests resulted in an inability to evaluate what tests were being used by a small sample of professionals.

A limitation that may have caused misinterpretations was that, in hindsight, particular definitions should have been provided within the demographics. In terms of language fluency, there was no definition on how the researchers expected it to be interpreted by participants. This may have resulted in a subjective view of the participant's skill levels. Perhaps one way to measure fluency would have been to ask participants if they had been evaluated through the American Sign Language Proficiency Interview (ALSPI) (Gallaudet University, 2014). The evaluation consists of a 20-25 minute interview that is video recorded. Afterwards, a team of evaluators rate the proficiency level of the examinee based on a 0-5 scale with "5" being fluent and "0" equaling no functional language ability. Except from level 5, the ASLPI proficiency level, may include a plus value (+) to indicate that the examinee successfully passed one level but does not meet all requirements for the higher level (Gallaudet University, 2014). Using a measure such as this to ask participants their level of ASL fluency may have resulted in it being a less ambiguous term.

A significant limitation is that the survey used for this study was created for the use of this research. One subsection of this limitation is that when asking participants

about "reducing or eliminating verbal items" some assessments (i.e. self reports) may not have verbal items in which questions are asked orally. A better way to have phrased this question may pertain to reduction of English language or consideration of participants' language abilities when conducting assessments.

Another limitation that may have caused misinterpretation during the survey was the wording in the modification statement, "I have not made any modifications to the test for any assessments." It seems that for all areas except cognitive/intelligence tests, participants responded with either a "1" or "7." Thus, it is important to consider if the phrasing of this question was clear to all participants. Those results had to be interpreted carefully due to this limitation.

Another limitation is the fact that the survey ignored how often the participants checked in with their examinees on their comprehension and understanding of the directions given. This also may add to the field for other researchers and practitioners working with the D/HOH to continually check in to make sure there has been no miscommunication that has occurred. When working with an interpreter or in another language, it is important to check with the clients about their understanding of the material and ask them to repeat back the instructions or information that were given (Harmer, 1999). This is even more important with the wide variation in language that the clients may have. Addressing this in the survey may have also helped us evaluate the amount of clarification given to the client or the level of understanding they may have.

Finally, a limitation is that categories were not given definitions. This may have been of concern for speech and language tests. It is possible that those who were filling out the survey may have interpreted this category as tests given by speech and language

pathologists. For example, the PPVT and WJIII both evaluate spoken language. This could be considered a speech test, however, participants that did admit using these tests in other categories denied having administered speech and language tests over the past two years. When a child is considered to have a specific speech and language difficulty, this means that they have a difficulty with *one or more* aspects of the language system (Dockrell & Lindsay, 2001). Speech disorders relate to difficulties in producing speech sounds and/or problems with the quality of one's voice. Language difficulties are problems with understanding or using words in context (Dockrell & Lindsay, 2001). If these definitions, or ones similar, had been specified, it may have made participants reconsider the meaning behind speech and language tests.

Despite these limitations, the current study has several practical implications including the importance of recognizing how specific the D/HOH population is and how imperative it is that we find ways to support them. This research was able to show most used tests per category for this small sample size and the typical problems with interpreters that are associated.

**Future Research**

If, in further research, the sample sizes of hearing status sub-groups could be increased then evaluating differences in test preference would be of benefit to see if any variation exists. As of now, hypothesis "a" was unable to be evaluated due to the small homogeneous sample. It may be of interest for future researchers to discuss the benefits and limitations to assessments with both deaf and hearing examiners. An evaluation of this sort may increase clarity towards the assessment process with the D/HOH. It is unknown if these groups are even equivalent in size in the population within the United

States. If deaf and hearing examiners are not of similar size, this hypothesis may have to be examined in other ways.

Evaluating speech and language tests that are used with the D/HOH population would be an interesting area to research further. Although this thesis attempted to evaluate speech and language tests, exploratory analyses of these tests could not be conducted. A further look in this area might add more understanding for other researchers and practitioners. Additionally, understanding not only the tests used but also the variety in language ability speech and language pathologists observe, may add to creating more psychometrically sound measures in the other categories discussed in this research. Validating subtests in specific tests for the D/HOH may require the step of speech and language pathologists first informing researchers in language variation in a large scale study in order to acquire the normative data for language ability. This could then influence the normative data for other tests and the start of standardized instructions within a range of specific language ability.

The D/HOH population has always been and continues to be heterogeneous. This is evident in intelligence, personality, lifestyle, cultural and ethnic background, mode of communication, age of onset, etiology, age of diagnosis, and presence of additional disabilities, just to name a few (Leigh et al., 1996). The number of psychologists proficient in ASL or knowledgeable about hearing loss is limited. This has often resulted in assessment and diagnostic errors by psychologists (Leigh et al., 1996). In addition, Olkin (1994) reported that after reviewing APA-accredited psychology programs, the modal number of courses in disability was zero and only 44 programs offered at least one course on disability – which generally was on learning disabilities, exceptional children,

and intellectual disabilities. Thus, the question remains, how can we evaluate a student in a psychometrically sound manner while incorporating all of these differences?

Future research might then include two areas. One, it may be important to evaluate psychology programs that are preparing professionals to work with diverse populations, such as D/HOH, and assess the disability courses and what they cover. It may be then important to also assess the test courses to evaluate the importance of psychometric teaching within the course. This could have the potential for more research in how to reduce not only error within the D/HOH assessments, but within all special-population assessments.

Leigh et al. (1996) support direct communication with the examinee whenever possible, as they feel that the examinee will typically prefer a practitioner who signs to a non-signing practitioner. There may be a lack of psychologists in the area, however, who are fluent in ASL resulting in the use of an interpreter. According to the NASP position statement, "When using an interpreter is necessary, only Interpreters/Transliterators certified by the Registry of Interpreters for the Deaf (RID), the National Cued Speech Association (NCSA), or the state certifying agency should be utilized" (NASP Position Statement, 2012, p. 3). Certified interpreters are skilled in assessing the client's communication needs and can quickly adjust communication methods in order to help the examinee (Leigh et al., 1996).

In 1994, Virginia implemented legislative regulations for educational interpreters to meet the same standards of fluency that the state's community interpreters which include a Level III score on the Virginia Quality Assurance Screening (VQAS) or a national certification from the Registry of Interpreters for the Deaf (RID). Scoring no

lower than 80% on any of the test's three areas attains a Level III. These areas are voice-to-sign, sign-to-voice, and transliterating (Seal, 2004). From 1994 to 2003, it was seen that the percentage of educational interpreters that met regulations increased, but in addition, a higher number had also been observed in the number of people who had failed to reach Level III, including those that reported having completed interpreter training programs (Seal, 2004). This just speaks to one state many years ago, but it is important to conduct more research and to implement high standards for interpreters and psychologists. All psychologists who work with the D/HOH should hold a certification from the RID and be able to attain a Level 4+ or 5 on the ALSPI. Ideally, in terms of research, an evaluation would be conducted on all psychologists that communicate directly with D/HOH individuals. There should be standards to check the competency of professionals and interpreters that work in the field.

Furthermore, conducting research similar to the South Carolina Department of Education where they attempted to translate the state achievement tests by videotaping it in both ASL and Signed English (Qi & Mitchell, 2011) may also allow for transition toward more appropriate measures. In reality, because a large problem with assessments is the large variability in language skills within the D/HOH population, it may be more realistic to train a number of practitioners as RIDs. This would allow practitioners to work one-on-one with their clients and have the ability to accommodate all language needs while decreasing the possibility of miscommunication. For all practitioners hoping to work with the D/HOH, a mandatory course should be created. This course would highlight the significant issues with the tests currently available and begin to create

standardized instructions for these tests. Ideally, it would be given as an elective as to not interfere with school or college university schedules.

Finally, as this is such a small and unique field, figuring out ways to conduct more research in general and to increase the response rate and participant interest is of key importance. What methods can be used to contact adults that are working with the D/HOH? This is where some focus must be directed. Furthermore, a large proportion of the articles found for this thesis were published in the *Journal of Deaf Studies and Deaf Education.* This was not due to a bias of the researcher but due to the fact that there are limited places in which to find research supporting the D/HOH. As a community, we must begin to find ways to increase the research within the D/HOH population and ways to expand our readerships by finding other reputable journals to publish this research.

**Concluding Remarks**

Currently, there are no official standardized sign language versions of a major intelligence or achievement tests (Krouse & Braden, 2011). If an examiner is not fluent in ASL, the use of written communication may not be the answer. It is important for an examiner to find an interpreter to ease the frustration. If a student is weak in written English, it is important to remember that the grammatical structures of ASL and English do differ and written language should not be evaluated in regard to a student's cognitive and psychological functioning as this could lead to diagnostic errors (Leigh et al., 1996). We must work to try to address the leniency that we allow when assessing the D/HOH. A practitioner may meet with a student only once for an evaluation, but that evaluation has the potential to change the child's lifestyle for the better.

We must remember why we have psychometric principles and their importance in measuring different skills accurately. Based on this survey, there seems to be discrepancy in which tests are best for this population. Hopefully in time, we can make it a priority to find ways to improve tests for the D/HOH.

In summary, the purpose of the present study was to examine professionals' assessment methods when working with the D/HOH. The demographics of the participant's were evaluated finding that the majority of participants were Caucasian hearing females who reported being fluent in ASL. Next, top preferences for test choices in each category were addressed. This was followed by each category being assessed for overall test choices and the likelihood of particular modifications for each test mentioned. Lastly, the psychometrics and the implications of the responses for each test area were explained. The discussion followed with addressing the limitations that were discovered within the research and ways to address and conduct future research.

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Appendix A

Final Test Battery for Assessing the Linkage of a Student's ASL Fluency to Academic Achievements by Moores and Sweet (1990).

| **Final Test Battery for Moores and Sweet (1990)** |
| --- |
| Stanford Achievement Test, 1982 Hearing Impaired Edition (SAT-HI); Stanford Achievement Test: Hearing Impaired Spelling, Narrative Comprehension, Cloze Procedure, Peabody Individual Achievement Test; Peabody Picture Vocabulary Test (PPVT), Reading Comprehension Subtest, Gates-MacGinitic Reading Test, Reading Comprehension and Speed and Accuracy Subtests, California Achievement Test: Vocabulary (CAT), Procedures of the National Assessment of Educational Progress (NAEP), Clinical Evaluations of Learning Function: Producing Word Associations Subtest, Expressive One-Word Picture Vocabulary Test (EOWPVT), Test of Syntactic Abilities: Screening Test, Rhode Island Test of Language Structure, Manual English Morphology Test, Language Proficiency Interviews, Wechsler Adult Intelligence Scale Revised (WAIS-R), Speech Intelligibility Evaluation (SPINE), Woodcock Reading Master Test: Word Attack Subtest, student questionnaire, and a parent questionnaire. |

*Appendix B*

Email for Participation

Hello,

My name is Emma Rathkey and I am a graduate student in the School Psychology Program at the University of Rhode Island. I am in the process of conducting research for my Master's Thesis. I am interesting in analyzing the assessment choices professionals use with those who are Deaf and hard-of-hearing. I would greatly appreciate your considering completion of the survey that follows.

All responses are aimed to help the field gain a better understanding of assessment choices and accommodations to these choices. This research is completely confidential and your name will never be used, released to anyone else, or connected with the data in any way. The survey will take approximately 20-30 minutes. To participate, you must be at least 18 years old and, within the past two years, have administered assessments to individuals who are Deaf and hard-of-hearing.

To record your responses and complete the survey, please click on the link below or copy and paste it into your web browser. You will be directed to the online survey site where you will receive more information.

[Insert Link]

Please feel free to forward this invitation to any colleagues or friends that may be eligible to participate.

If you have any questions or comments at any time, please contact Emma Rathkey at emma_rathkey@my.uri.edu.

Thank you for your participation.

*Appendix C*

Demographics Questionnaire

Based on the following questions, please check the appropriate box that best describes you:

1. Gender: ____ Male ____ Female

2. Highest level of education achieved
    a. _____ Master's Degree
    b. _____ Master's Degree 30+ or Specialist Degree
    c. _____ Doctoral Degree
    d. _____ Other (Please Specify)

3. Please specify the state in which you work: _____

4. Hearing Status:
    a. _____ Hearing
    b. _____ Hard of Hearing
    c. _____ Deaf

5. Age Range:
    a. _____ 20-29
    b. _____ 30-39
    c. _____ 40-49
    d. _____ 50-59
    e. _____ 60 and over

6. Place of Work (check all that apply):
    a. _____ Elementary
    b. _____ Middle
    c. _____ High School
    d. _____ Consultation
    e. _____ Public District
    f. _____ Private District
    g. _____ Private Practice
    h. _____ Other (Please Specify)

7. Primary Role:
    a. ____ Teaching
    b. ____ Counseling
    c. ____ Assessment/Report Writing
    d. ____ Psycho-educational/Behavioral Intervention
    e. ____ Consultation
    f. ____ Other (Please Specify)

8. Please specify your level of sign language (check all that apply):
    a. ____ No ASL knowledge
    b. ____ Basic ASL knowledge
    c. ____ Signing Exact English
    d. ____ Cued Speech
    e. ____ Partially Fluent in ASL
    f. ____ ASL Fluent

9. Where did you learn sign language?
    a. ____Never taught ASL
    b. ____Picked it up through my environment
    c. ____Grew up with a friend or relative who uses a form of sign language
    d. ____Through courses over the years
    e. ____Enrolled in courses or an academy for a number of years to become fluent/near fluent in the language
    f. Other (please specify): _____

10. Ethnicity:
    a. ____Caucasian
    b. ____Asian
    c. ____African American/Black
    d. ____Hispanic/Latino
    e. ____Pacific Islander
    f. ____American Indian/Alaskan
    g. Other:_____

11. In your training, have you had coursework that addresses the Deaf/Hard-of Hearing?
    a. ____ Yes
    b. ____ No

12. On a scale from 0 (never work with the Deaf/Hard-of-Hearing)-100 (work exclusively with the Deaf/Hard-of-Hearing), the approximate percentage of time I work with deaf or hard of hearing individuals is:
    a. ____ 0 %
    b. ____ 1- 20%
    c. ____ 21 – 50%
    d. ____ 51 – 75%
    e. ____ 76 – 99%
    f. ____ 100%

*Appendix D*

Assessment Preference Questionnaire

Within the past 2 years, have you administered any **cognitive/intelligence tests** for Deaf and/or Hard-of-Hearing students (D/HOH)?

a. ___ Yes
b. ___ No

Within the past 2 years, how many times have you administered a **Cognitive/Intelligence Test** to D/HOH students?

a. ___ 0
b. ___ 1 - 9
c. ___ 10 - 25
d. ___ 26 - 99
e. ___ 100 or more

What **cognitive/intelligence tests** for Deaf and/or Hard-of-Hearing students have you used? Please indicate up to four tests in order of frequency of use, starting with the test you use the most.

| **Test Name:** |
|---|
| 1. |
| 2. |
| 3. |
| 4. |

For each test given, please approximate the percentage of times you have administered this test when conducting formal evaluation of the cognitive/intellectual functioning of D/HOH students in the ***past 2 years***.

Test #1:

a. ___ 0%
b. ___ 1-24%
c. ___ 25-49%
d. ___ 50- 74%
e. ___ 75- 100%

Test #2:

a. ___ 0%
b. ___ 1-24%
c. ___ 25-49%
d. ___ 50- 74%
e. ___ 75- 100%

Test #3:

a. ___ 0%
b. ___ 1-24%
c. ___ 25-49%
d. ___ 50- 74%
e. ___ 75- 100%

Test #4:

a. ___ 0%
b. ___ 1-24%
c. ___ 25-49%
d. ___ 50- 74%
e. ___ 75- 100%

For each test given, using the Likert Scale ranging from 1 (0% of the time) to 7 (100% of the time), please rank the amount of time in which you have made the specified modification during standardized test administration procedures in the *last 2 years:*

Never (0%) – Always (100%)

1 = 0% Never
2
3
4 = 50% Sometimes
5
6
7 = 100% Always

**Test #1:**

a. Elimination or reduction of verbal items

(0% Never) 1 2 3 4 5 6 7 (100% Always)

b. Use of an interpreter

(0% Never) 1 2 3 4 5 6 7 (100% Always)

c. Administration in a form of sign language

(0% Never) 1 2 3 4 5 6 7 (100% Always)

d. I have not made any modifications to the test for any assessments

(0% Never) 1 2 3 4 5 6 7 (100% Always)

e. Other (Please Specify):

(0% Never) 1 2 3 4 5 6 7 (100% Always)

**Test #2:**

a. Elimination or reduction of verbal items

(0% Never) 1 2 3 4 5 6 7 (100% Always)

b. Use of an interpreter

(0% Never) 1 2 3 4 5 6 7 (100% Always)

c. Administration in a form of sign language

(0% Never) 1 2 3 4 5 6 7 (100% Always)

d. I have not made any modifications to the test for any assessments

(0% Never) 1 2 3 4 5 6 7 (100% Always)

e. Other (Please Specify):

(0% Never) 1 2 3 4 5 6 7 (100% Always)

**Test #3:**

a. Elimination or reduction of verbal items

(0% Never) 1 2 3 4 5 6 7 (100% Always)

b. Use of an interpreter

(0% Never) 1 2 3 4 5 6 7 (100% Always)

c. Administration in a form of sign language

(0% Never) 1 2 3 4 5 6 7 (100% Always)

d. I have not made any modifications to the test for any assessments

(0% Never) 1 2 3 4 5 6 7 (100% Always)

e. Other (Please Specify):

(0% Never) 1 2 3 4 5 6 7 (100% Always)

**Test #4:**

a. Elimination or reduction of verbal items

(0% Never) 1 2 3 4 5 6 7 (100% Always)

b. Use of an interpreter

(0% Never) 1 2 3 4 5 6 7 (100% Always)

c. Administration in a form of sign language

(0% Never) 1 2 3 4 5 6 7 (100% Always)

d. I have not made any modifications to the test for any assessments

(0% Never) 1 2 3 4 5 6 7 (100% Always)

e. Other (Please Specify):

(0% Never) 1 2 3 4 5 6 7 (100% Always)

When selecting **Cognitive/Intelligence tests** for assessing D/HOH children, different priorities may be assigned to different test qualities. We would like to know the relative priorities you assign to the following test dimensions. We understand you may consider multiple or all of these dimensions important, but we wish to better understand how important you view each dimension in comparison to other dimensions.

Based on the previous **Cognitive/Intelligence tests** you listed, please rank order the following 6 reasons as to why you administer this test, using each number only once, with 1 being most important and 6 being least important.

For term definitions, please refer to the list below.

**Reliability** – Assuming the person has not changed, the extent to which a test yields consistent results on retesting or across examiners.

**Standardized Administration Procedures** – The process of administering assessments exactly as specified in the administration manual.

**Flexibility of the Test** – The extent to which I can modify prescribed administration procedures in different settings or with clients.

**Normative Data** – The quality of the samples or samples used to determine normal level of test performance and the similarity of those samples to the current examinee.

**Clinical Considerations** – Your professional impressions or judgments of the test's value based on your experience using it.

**Validity** – Degree to which scientific research supports the interpretations of test scores: The test measures what it is claiming to measure.

| **Test Name:** | Reliability | Standardized Administration Procedures | Flexibility of the Test | Normative Data |
|---|---|---|---|---|
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |

| **Test Name:** | Clinical Considerations | Validity |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |

Within the past 2 years, have you administered any **Neuropsychological** for Deaf and/or Hard-of-Hearing students (D/HOH)?

a. ___ Yes
b. ___ No

Within the past 2 years, how many times have you administered a **Neuropsychological** to D/HOH students?

a. ___ 0
b. ___ 1 - 9
c. ___ 10 - 25
d. ___ 26 - 99
e. ___ 100 or more

What **Neuropsychological** for Deaf and/or Hard-of-Hearing students have you used? Please indicate up to four tests in order of frequency of use, starting with the test you use the most.

| **Test Name:** |
|---|
| 1. |
| 2. |
| 3. |
| 4. |

For each test given, please approximate the percentage of times you have administered this test when conducting formal evaluation of the neurological functioning of D/HOH students in the ***past 2 years***.

Test #1:

a. ___ 0%
b. ___ 1-24%
c. ___ 25-49%
d. ___ 50- 74%
e. ___ 75- 100%

Test #2:

a. ___ 0%
b. ___ 1-24%
c. ___ 25-49%
d. ___ 50- 74%
e. ___ 75- 100%

Test #3:

a. ___ 0%
b. ___ 1-24%
c. ___ 25-49%

d. ___ 50- 74%
e. ___ 75- 100%

Test #4:

a. ___ 0%
b. ___ 1-24%
c. ___ 25-49%
d. ___ 50- 74%
e. ___ 75- 100%

For each test given, using the Likert Scale ranging from 1 (0% of the time) to 7 (100% of the time), please rank the amount of time in which you have made the specified modification during standardized test administration procedures in the *last 2 years:*

Never (0%) – Always (100%)

1 = 0% Never
2
3
4 = 50% Sometimes
5
6
7 = 100% Always

**Test #1:**

a. Elimination or reduction of verbal items

(0% Never) 1 2 3 4 5 6 7 (100% Always)

b. Use of an interpreter

(0% Never) 1 2 3 4 5 6 7 (100% Always)

c. Administration in a form of sign language

(0% Never) 1 2 3 4 5 6 7 (100% Always)

d. I have not made any modifications to the test for any assessments

(0% Never) 1 2 3 4 5 6 7 (100% Always)

e. Other (Please Specify):

(0% Never) 1 2 3 4 5 6 7 (100% Always)

**Test #2:**

a. Elimination or reduction of verbal items

(0% Never) 1 2 3 4 5 6 7 (100% Always)

b. Use of an interpreter

(0% Never) 1 2 3 4 5 6 7 (100% Always)

c. Administration in a form of sign language

(0% Never) 1 2 3 4 5 6 7 (100% Always)

d. I have not made any modifications to the test for any assessments

(0% Never) 1 2 3 4 5 6 7 (100% Always)

e. Other (Please Specify):

(0% Never) 1 2 3 4 5 6 7 (100% Always)

**Test #3:**

a. Elimination or reduction of verbal items

(0% Never) 1 2 3 4 5 6 7 (100% Always)

b. Use of an interpreter

(0% Never) 1 2 3 4 5 6 7 (100% Always)

c. Administration in a form of sign language

(0% Never) 1 2 3 4 5 6 7 (100% Always)

d. I have not made any modifications to the test for any assessments

(0% Never) 1 2 3 4 5 6 7 (100% Always)

e. Other (Please Specify):

(0% Never) 1 2 3 4 5 6 7 (100% Always)

**Test #4:**

a. Elimination or reduction of verbal items

(0% Never) 1 2 3 4 5 6 7 (100% Always)

b. Use of an interpreter

(0% Never) 1 2 3 4 5 6 7 (100% Always)

c. Administration in a form of sign language

(0% Never) 1 2 3 4 5 6 7 (100% Always)

d. I have not made any modifications to the test for any assessments

(0% Never) 1 2 3 4 5 6 7 (100% Always)

e. Other (Please Specify):

(0% Never) 1 2 3 4 5 6 7 (100% Always)

When selecting **Neuropsychological tests** for assessing D/HOH children, different priorities may be assigned to different test qualities. We would like to know the relative priorities you assign to the following test dimensions. We understand you may consider multiple or all of these dimensions important, but we wish to better understand how important you view each dimension in comparison to other dimensions.

Based on the previous **Neuropsychological tests** you listed, please rank order the following 6 reasons as to why you administer this test, using each number only once, with 1 being most important and 6 being least important.

For term definitions, please refer to the list below.

**Reliability** – Assuming the person has not changed, the extent to which a test yields consistent results on retesting or across examiners.

**Standardized Administration Procedures** – The process of administering assessments exactly as specified in the administration manual.

**Flexibility of the Test** – The extent to which I can modify prescribed administration procedures in different settings or with clients.

**Normative Data** – The quality of the samples or samples used to determine normal level of test performance and the similarity of those samples to the current examinee.

**Clinical Considerations** – Your professional impressions or judgments of the test's value based on your experience using it.

**Validity** – Degree to which scientific research supports the interpretations of test scores: The test measures what it is claiming to measure.

| **Test Name:** | Reliability | Standardized Administration Procedures | Flexibility of the Test | Normative Data |
|---|---|---|---|---|
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |

| **Test Name:** | Clinical Considerations | Validity |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |

Within the past 2 years, have you administered any **Academic Skills Tests** for Deaf and/or Hard-of-Hearing students (D/HOH)?

a. ___ Yes
b. ___ No

Within the past 2 years, how many times have you administered an **Academic Skills Test** to D/HOH students?

a. ___ 0
b. ___ 1 - 9
c. ___ 10 - 25
d. ___ 26 - 99
e. ___ 100 or more

What **Academic Skills Tests** for Deaf and/or Hard-of-Hearing students have you used? Please indicate up to four tests in order of frequency of use, starting with the test you use the most.

| **Test Name:** |
|---|
| 1. |
| 2. |
| 3. |
| 4. |

For each test given, please approximate the percentage of times you have administered this test when conducting formal evaluation of the academic functioning of D/HOH students in the ***past 2 years***.

Test #1:

a. ___ 0%
b. ___ 1-24%
c. ___ 25-49%
d. ___ 50- 74%
e. ___ 75- 100%

Test #2:

a. ___ 0%
b. ___ 1-24%
c. ___ 25-49%
d. ___ 50- 74%
e. ___ 75- 100%

Test #3:

a. ___ 0%
b. ___ 1-24%
c. ___ 25-49%

d. ___ 50- 74%
e. ___ 75- 100%

Test #4:

a. ___ 0%
b. ___ 1-24%
c. ___ 25-49%
d. ___ 50- 74%
e. ___ 75- 100%

For each test given, using the Likert Scale ranging from 1 (0% of the time) to 7 (100% of the time), please rank the amount of time in which you have made the specified modification during standardized test administration procedures in the *last 2 years:*

Never (0%) – Always (100%)

1 = 0% Never
2
3
4 = 50% Sometimes
5
6
7 = 100% Always

**Test #1:**

a. Elimination or reduction of verbal items

(0% Never) 1 2 3 4 5 6 7 (100% Always)

b. Use of an interpreter

(0% Never) 1 2 3 4 5 6 7 (100% Always)

c. Administration in a form of sign language

(0% Never) 1 2 3 4 5 6 7 (100% Always)

d. I have not made any modifications to the test for any assessments

(0% Never) 1 2 3 4 5 6 7 (100% Always)

e. Other (Please Specify):

(0% Never) 1 2 3 4 5 6 7 (100% Always)

**Test #2:**

a. Elimination or reduction of verbal items

(0% Never) 1 2 3 4 5 6 7 (100% Always)

b. Use of an interpreter

(0% Never) 1 2 3 4 5 6 7 (100% Always)

c. Administration in a form of sign language

(0% Never) 1 2 3 4 5 6 7 (100% Always)

d. I have not made any modifications to the test for any assessments

(0% Never) 1 2 3 4 5 6 7 (100% Always)

e. Other (Please Specify):

(0% Never) 1 2 3 4 5 6 7 (100% Always)

**Test #3:**

a. Elimination or reduction of verbal items

(0% Never) 1 2 3 4 5 6 7 (100% Always)

b. Use of an interpreter

(0% Never) 1 2 3 4 5 6 7 (100% Always)

c. Administration in a form of sign language

(0% Never) 1 2 3 4 5 6 7 (100% Always)

d. I have not made any modifications to the test for any assessments

(0% Never) 1 2 3 4 5 6 7 (100% Always)

e. Other (Please Specify):

(0% Never) 1 2 3 4 5 6 7 (100% Always)

**Test #4:**

a. Elimination or reduction of verbal items

(0% Never) 1 2 3 4 5 6 7 (100% Always)

b. Use of an interpreter

(0% Never) 1 2 3 4 5 6 7 (100% Always)

c. Administration in a form of sign language

(0% Never) 1 2 3 4 5 6 7 (100% Always)

d. I have not made any modifications to the test for any assessments

(0% Never) 1 2 3 4 5 6 7 (100% Always)

e. Other (Please Specify):

(0% Never) 1 2 3 4 5 6 7 (100% Always)

When selecting **Academic Skills Tests** for assessing D/HOH children, different priorities may be assigned to different test qualities. We would like to know the relative priorities you assign to the following test dimensions. We understand you may consider multiple or all of these dimensions important, but we wish to better understand how important you view each dimension in comparison to other dimensions.

Based on the previous **Academic Skills Tests** you listed, please rank order the following 6 reasons as to why you administer this test, using each number only once, with 1 being most important and 6 being least important.

For term definitions, please refer to the list below.

**Reliability** – Assuming the person has not changed, the extent to which a test yields consistent results on retesting or across examiners.

**Standardized Administration Procedures** – The process of administering assessments exactly as specified in the administration manual.

**Flexibility of the Test** – The extent to which I can modify prescribed administration procedures in different settings or with clients.

**Normative Data** – The quality of the samples or samples used to determine normal level of test performance and the similarity of those samples to the current examinee.

**Clinical Considerations** – Your professional impressions or judgments of the test's value based on your experience using it.

**Validity** – Degree to which scientific research supports the interpretations of test scores: The test measures what it is claiming to measure.

| **Test Name:** | Reliability | Standardized Administration Procedures | Flexibility of the Test | Normative Data |
|---|---|---|---|---|
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |

| **Test Name:** | Clinical Considerations | Validity |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |

Within the past 2 years, have you administered any **Speech and Language Tests** for Deaf and/or Hard-of-Hearing students (D/HOH)?

a. ___ Yes
b. ___ No

Within the past 2 years, how many times have you administered a **Speech and Language Test** to D/HOH students?

a. ___ 0
b. ___ 1 - 9
c. ___ 10 - 25
d. ___ 26 - 99
e. ___ 100 or more

What **Speech and Language tests** for Deaf and/or Hard-of-Hearing students have you used? Please indicate up to four tests in order of frequency of use, starting with the test you use the most.

| **Test Name:** |
|---|
| 1. |
| 2. |
| 3. |
| 4. |

For each test given, please approximate the percentage of times you have administered this test when conducting formal evaluation of the speech and language functioning of D/HOH students in the ***past 2 years***.

Test #1:

a. ___ 0%
b. ___ 1-24%
c. ___ 25-49%
d. ___ 50- 74%
e. ___ 75- 100%

Test #2:

a. ___ 0%
b. ___ 1-24%
c. ___ 25-49%
d. ___ 50- 74%
e. ___ 75- 100%

Test #3:

a. ___ 0%
b. ___ 1-24%
c. ___ 25-49%

d. ___ 50- 74%
e. ___ 75- 100%

Test #4:

a. ___ 0%
b. ___ 1-24%
c. ___ 25-49%
d. ___ 50- 74%
e. ___ 75- 100%

For each test given, using the Likert Scale ranging from 1 (0% of the time) to 7 (100% of the time), please rank the amount of time in which you have made the specified modification during standardized test administration procedures in the *last 2 years:*

Never (0%) – Always (100%)

1 = 0% Never
2
3
4 = 50% Sometimes
5
6
7 = 100% Always

**Test #1:**

a. Elimination or reduction of verbal items

(0% Never) 1 2 3 4 5 6 7 (100% Always)

b. Use of an interpreter

(0% Never) 1 2 3 4 5 6 7 (100% Always)

c. Administration in a form of sign language

(0% Never) 1 2 3 4 5 6 7 (100% Always)

d. I have not made any modifications to the test for any assessments

(0% Never) 1 2 3 4 5 6 7 (100% Always)

e. Other (Please Specify):

(0% Never) 1 2 3 4 5 6 7 (100% Always)

**Test #2:**

a. Elimination or reduction of verbal items

(0% Never) 1 2 3 4 5 6 7 (100% Always)

b. Use of an interpreter

(0% Never) 1 2 3 4 5 6 7 (100% Always)

c. Administration in a form of sign language

(0% Never) 1 2 3 4 5 6 7 (100% Always)

d. I have not made any modifications to the test for any assessments

(0% Never) 1 2 3 4 5 6 7 (100% Always)

e. Other (Please Specify):

(0% Never) 1 2 3 4 5 6 7 (100% Always)

**Test #3:**

a. Elimination or reduction of verbal items

(0% Never) 1 2 3 4 5 6 7 (100% Always)

b. Use of an interpreter

(0% Never) 1 2 3 4 5 6 7 (100% Always)

c. Administration in a form of sign language

(0% Never) 1 2 3 4 5 6 7 (100% Always)

d. I have not made any modifications to the test for any assessments

(0% Never) 1 2 3 4 5 6 7 (100% Always)

e. Other (Please Specify):

(0% Never) 1 2 3 4 5 6 7 (100% Always)

**Test #4:**

a. Elimination or reduction of verbal items

(0% Never) 1 2 3 4 5 6 7 (100% Always)

b. Use of an interpreter

(0% Never) 1 2 3 4 5 6 7 (100% Always)

c. Administration in a form of sign language

(0% Never) 1 2 3 4 5 6 7 (100% Always)

d. I have not made any modifications to the test for any assessments

(0% Never) 1 2 3 4 5 6 7 (100% Always)

e. Other (Please Specify):

(0% Never) 1 2 3 4 5 6 7 (100% Always)

When selecting **Speech and Language tests** for assessing D/HOH children, different priorities may be assigned to different test qualities. We would like to know the relative priorities you assign to the following test dimensions. We understand you may consider multiple or all of these dimensions important, but we wish to better understand how important you view each dimension in comparison to other dimensions.

Based on the previous **Speech and Language tests** you listed, please rank order the following 6 reasons as to why you administer this test, using each number only once, with 1 being most important and 6 being least important.

For term definitions, please refer to the list below.

**Reliability** – Assuming the person has not changed, the extent to which a test yields consistent results on retesting or across examiners.

**Standardized Administration Procedures** – The process of administering assessments exactly as specified in the administration manual.

**Flexibility of the Test** – The extent to which I can modify prescribed administration procedures in different settings or with clients.

**Normative Data** – The quality of the samples or samples used to determine normal level of test performance and the similarity of those samples to the current examinee.

**Clinical Considerations** – Your professional impressions or judgments of the test's value based on your experience using it.

**Validity** – Degree to which scientific research supports the interpretations of test scores: The test measures what it is claiming to measure.

| **Test Name:** | Reliability | Standardized Administration Procedures | Flexibility of the Test | Normative Data |
|---|---|---|---|---|
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |

| **Test Name:** | Clinical Considerations | Validity |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |

Within the past 2 years, have you administered any **Socio-Emotional/Psycho-Behavioral Tests including direct observations** for Deaf and/or Hard-of-Hearing students (D/HOH)?

a. ___ Yes
b. ___ No

Within the past 2 years, how many times have you administered a **Socio-Emotional/Psycho-Behavioral Test including direct observations** to D/HOH students?

a. ___ 0
b. ___ 1 - 9
c. ___ 10 - 25
d. ___ 26 - 99
e. ___ 100 or more

What **Socio-Emotional/Psycho-Behavioral Tests including direct observations** for Deaf and/or Hard-of-Hearing students have you used? Please indicate up to four tests in order of frequency of use, starting with the test you use the most.

| **Test Name:** |
|---|
| 1. |
| 2. |
| 3. |
| 4. |

For each test given, please approximate the percentage of times you have administered this test when conducting formal evaluation of Socio-Emotional/Psycho-Behavioral functioning of D/HOH students in the ***past 2 years***.

Test #1:

a. ___ 0%
b. ___ 1-24%
c. ___ 25-49%
d. ___ 50- 74%
e. ___ 75- 100%

Test #2:

a. ___ 0%
b. ___ 1-24%
c. ___ 25-49%
d. ___ 50- 74%
e. ___ 75- 100%

Test #3:

a. ___ 0%
b. ___ 1-24%

c. ___ 25-49%
d. ___ 50- 74%
e. ___ 75- 100%

Test #4:

a. ___ 0%
b. ___ 1-24%
c. ___ 25-49%
d. ___ 50- 74%
e. ___ 75- 100%

For each test given, using the Likert Scale ranging from 1 (0% of the time) to 7 (100% of the time), please rank the amount of time in which you have made the specified modification during standardized test administration procedures in the *last 2 years:*

Never (0%) – Always (100%)

1 = 0% Never
2
3
4 = 50% Sometimes
5
6
7 = 100% Always

**Test #1:**

a. Elimination or reduction of verbal items

(0% Never) 1 2 3 4 5 6 7 (100% Always)

b. Use of an interpreter

(0% Never) 1 2 3 4 5 6 7 (100% Always)

c. Administration in a form of sign language

(0% Never) 1 2 3 4 5 6 7 (100% Always)

d. I have not made any modifications to the test for any assessments

(0% Never) 1 2 3 4 5 6 7 (100% Always)

e. Other (Please Specify):

(0% Never) 1 2 3 4 5 6 7 (100% Always)

**Test #2:**

a. Elimination or reduction of verbal items

(0% Never) 1 2 3 4 5 6 7 (100% Always)

b. Use of an interpreter

(0% Never) 1 2 3 4 5 6 7 (100% Always)

c. Administration in a form of sign language

(0% Never) 1 2 3 4 5 6 7 (100% Always)

d. I have not made any modifications to the test for any assessments

(0% Never) 1 2 3 4 5 6 7 (100% Always)

e. Other (Please Specify):

(0% Never) 1 2 3 4 5 6 7 (100% Always)

**Test #3:**

a. Elimination or reduction of verbal items

(0% Never) 1 2 3 4 5 6 7 (100% Always)

b. Use of an interpreter

(0% Never) 1 2 3 4 5 6 7 (100% Always)

c. Administration in a form of sign language

(0% Never) 1 2 3 4 5 6 7 (100% Always)

d. I have not made any modifications to the test for any assessments

(0% Never) 1 2 3 4 5 6 7 (100% Always)

e. Other (Please Specify):

(0% Never) 1 2 3 4 5 6 7 (100% Always)

**Test #4:**

a. Elimination or reduction of verbal items

(0% Never) 1 2 3 4 5 6 7 (100% Always)

b. Use of an interpreter

(0% Never) 1 2 3 4 5 6 7 (100% Always)

c. Administration in a form of sign language

(0% Never) 1 2 3 4 5 6 7 (100% Always)

d. I have not made any modifications to the test for any assessments

(0% Never) 1 2 3 4 5 6 7 (100% Always)

e. Other (Please Specify):

(0% Never) 1 2 3 4 5 6 7 (100% Always)

When selecting **Socio-Emotional/Psycho-Behavioral tests including Direct Observation** for assessing D/HOH children, different priorities may be assigned to different test qualities. We would like to know the relative priorities you assign to the following test dimensions. We understand you may consider multiple or all of these dimensions important, but we wish to better understand how important you view each dimension in comparison to other dimensions.

Based on the previous **Socio-Emotional/Psycho-Behavioral tests including Direct Observation** you listed, please rank order the following 6 reasons as to why you administer this test, using each number only once, with 1 being most important and 6 being least important.

For term definitions, please refer to the list below.

**Reliability** – Assuming the person has not changed, the extent to which a test yields consistent results on retesting or across examiners.

**Standardized Administration Procedures** – The process of administering assessments exactly as specified in the administration manual.

**Flexibility of the Test** – The extent to which I can modify prescribed administration procedures in different settings or with clients.

**Normative Data** – The quality of the samples or samples used to determine normal level of test performance and the similarity of those samples to the current examinee.

**Clinical Considerations** – Your professional impressions or judgments of the test's value based on your experience using it.

**Validity** – Degree to which scientific research supports the interpretations of test scores: The test measures what it is claiming to measure.

| **Test Name:** | Reliability | Standardized Administration Procedures | Flexibility of the Test | Normative Data |
|---|---|---|---|---|
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |

| **Test Name:** | Clinical Considerations | Validity |
|---|---|---|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |

1. If you have previously used an interpreter, what are some difficulties that you have encountered?: _____

2. Please write any other comments or concerns you have encountered or have in regards to assessing Deaf/Hard-of-Hearing students that have this questionnaire has not previously covered_____

*Appendix E*

Informed Consent Form

**Informed Consent Form**

**Title of Research Project:** Psychoeducational Assessment Choices for the Deaf and Hard-of-Hearing

**Principal Investigator:** Emma Rathkey, B.A. 401-619-0794

**Major Professor:** W. Grant Willis, Ph.D. 401-874-4245.

DESCRIPTION OF THE RESEARCH AND THE RIGHTS OF PARTICIPANTS
You have been asked to take part in a study described below. If you have more questions later, call 401-619-0794, and Emma Rathkey, the person mainly responsible for this study will discuss them with you.

1. **Purpose of Study:** The purpose of this project is to investigate assessment choices by professionals working with the Deaf and Hard-of-Hearing.

2. **Procedure:** You are one of about 100 professionals who will be asked to respond to questions about preferred assessment choices when evaluating Deaf and Hard-of-Hearing individuals. There are no right or wrong answers, just answer what is true for you. To participate, you must be 18 years of age and be able to read English. Your participation should last about 30-45 minutes.

3. **Risks:** There are minimal risks associated with participating in this research. If the survey raises any issues, concerns, or distress, we urge you to contact the University of Rhode Island Counseling Center at 401-874-5010.

4. **Benefits:** You many not receive any direct benefits from taking part in this study. Taking part in the study may help others in the future. Some people may learn more about their beliefs in regards to assessment and evaluation procedures. Some people may find participation in this research informative and personally beneficial.

5. **Costs/Payments:** This project is being funded by Emma Rathkey and the University of Rhode Island. There will be no costs to you, except your time spent taking the survey.

6. **Confidentiality:** Participation in this project is confidential and anonymous. Your information will not be shared with any organizations. Your name will never be collected and therefore cannot be connected with your data. Research summaries will combine all the information collected. No individual information will be reported. Data will be stored in statistical analysis software (SPSS), on a computer that is password protected. Only the principal investigator will have access to this computer and the data. You consent to the publication of the results collected and know that your identity will remain protected.

7. **Right to Refuse to Participate:** The decision whether or not to take part in this study is up to you. It is understood that you may refuse to answer any questions as you see fit, and that you may withdraw from this study at any time without penalty.

8. **Questions/Concerns:** This study is being conducted by Emma Rathkey under the direct supervision of W. Grant Willis at the University of Rhode Island. If you have any questions or concerns about this study, please contact Ms. Rathkey at 401-619-0794 or Dr. Willis at 401-874-4245.

**If you have any questions or concerns about your rights as a participant, if this study causes you any harm, or if you feel you are receiving pressure to continue in this study against your wishes, you may also contact the University of Rhode Island's Vice President for Research, 70 Lower College Road, Suite 2, URI, Kingston, RI, (401) 874-4328.**

**You understand that you many ask any additional questions at any time, that your participation in this project is voluntary, and that you may withdraw from this project at any time. Your decision to complete a survey means that you understand the information provided and you agree to participate in this project.**

_____
Principal Investigator's Name

_____
Principal Investigator's Signature

*Appendix F*

Debriefing Form

First and foremost, thank you for participating in this research on assessment choices for the Deaf/Hard-of-Hearing population. Emma Rathkey, a School Psychology student, at the University of Rhode Island, developed the survey you have just completed. This research, titled "Psychoeducational Assessment Choices for the Deaf and Hard-of-Hearing" is being conducted in order to fulfill requirements for a master's degree in Psychology. I was interested in determining the most popular choices for assessment and the reasoning behind choosing them for the Deaf/Hard-of-Hearing population. The main function of this research is primarily exploratory.

My hypotheses are as follows: (a) Hearing status and sign language knowledge will show significant differences in assessment preferences; (b) Professionals will choose similar modifications across identical assessments. I would appreciate it if you refrain from sharing your experience in the study until the end of the year when the study has been completed.

If you are interested in this topic and want to read the literature in this area, please contact me, Emma Rathkey at emma_rathkey@my.uri.edu or at (401) 619-0794. The University of Rhode Island Institutional Review Board (IRB) approved this study, and any additional questions regarding the research can be directed to the Vice President for Research, at (401) 874-4328, or at 70 Lower College Road, Suite 2, University of Rhode Island, Kingston, Rhode Island.

Listed below are a few more sources you may wish to consult to learn more about this topic:

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